SmarterChart 500 SERIES

Chart Plotter Name	Description	SOFTWARE
CHART PLOTTER	*5" Sunlight Readeable Color Display* *Internal GPS Receiver*	S4xgDY5vc
SOUNDER COMBO	*5" Sunlight Readeable Color Display* *Internal GPS Receiver & Internal Fish Finder*	S4xgDY5vc
AIS COMBO	*5" Sunlight Readeable Color Display* *Internal GPS Receiver & Internal AIS*	S4xgDY5vc

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Full User Manual

code: (a1609-030210e)

WARNING

Electronic charts displayed by the chart plotter are believed to be accurate and reliable, but they are not intended to replace official charts which should remain your main reference for all the matters related to the execution of a safe navigation. For this reason we would like to remind you that you are required to carry on board and use the officially published and approved nautical charts.

CAUTION

- Please read through this manual before the first operation. If you have any questions, please contact the Company's customer service or your local dealer.
- The chart plotter is not built water proof. Please give attention to avoid water intrusion into the chart plotter. Water damage is not covered by the warranty.
- Extensive exposure to heat may result in damage to the chart plotter.
- Connection to the power source with reversed polarity will damage the chart plotter severely. This damage is not covered by the warranty.
- The chart plotter contains dangerous high voltage circuits which only experienced technicians MUST handle.
- The C-MAP BY JEPPESEN C-CARDs are available from your local dealer.
- Exposure of the display to UV rays may shorten the life of the liquid crystals used in your plotter. This limitation is due to the current technology of the LCD displays.
- Avoid overheating which may cause loss of contrast and, in extreme cases, a darkening of the screen. Problems which occur from overheating are reversible when temperature decreases.

WARNING ON SERIAL PORTS CONNECTION

Please be aware that the serial ports are not opto-isolated and then the external device is electrically connected to the chart plotter. This allows the connection of high speed devices, like Fish Finder. If you are connecting a NMEA0183 device and you would like to isolate it from the chart plotter, you have to add the opto-isolator externally.

CLEANING PROCEDURE FOR THE PLOTTER SCREEN

Cleaning your chart plotter screen is a very important operation and must be done carefully. Since the surface is covered by an antireflective coating, the procedure for cleaning all the surfaces can be performed in the following way. You use a tissue or lens tissue and a cleaning spray containing Isopropanol (a normal spray cleaner sold for the PC screen, for example PolaClear by Polaroid). Fold the tissue or lens tissue into a triangular shape, moisten the tip and use the index finger behind a corner to move the tissue across the surface, in overlapping side to side strokes. If the tissue is too wet, a noticeable wet film will be left in its path and you will need to repeat the process. If too dry, the tissue won't glide easily, and may damage the surface.

We will not be liable for errors contained herein, or for incidental or consequential damages in connection with the performance or use of this material.

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1. Introduction

If you have not used a position-finding instrument before and intend to use your chart plotter for navigating, we suggest you should read this User Manual and make sure you are familiar with its contents.

The User Manual is divided into three main parts. Chapter "Before You Begin" introduces you to the basic information to get you start using the chart plotter. Chapter "For the New User" should be read first to become familiar with your new instrument. Chapter "For the Experienced User" introduces the advanced features of the chart plotter.

Throughout this User Manual, the labelled keys are shown in capitals letters enclosed between single inverted commas, for example 'MENU'; the software keys are shown in small capital letters enclosed in square brackets, for example 'ACCEPT'.

Menu operations are in bold characters listed by keys sequence with the menu names enclosed between inverted commas, for example **'ENTER' + "MARK" + 'ENTER' + 'MOVE' + 'ACCEPT'** means: press the 'ENTER' key, using the cursor key select the Mark option and press 'ENTER' to place Mark, press the software key **'MOVE'** to change the Mark position and press the software key **'ACCEPT'** to confirm the new position.

Terms underlined, for example Mark, are explained in the Chapter 7.

Into all information windows items are displayed in gray color when there are not active (it is not possible to select them and place on the cursor).

Any menu operation and function activation in this User Manual is related to all chart plotter models (see the previous table). Whenever it is necessary, a note has been inserted for the other models.

1.1 FEATURES

The chart plotter is a computer specifically designed for nautical use but, more precisely, to ease and speed up all calculations, which so far have been done manually. If connected to a positioning instrument, the chart plotter displays the current position, the speed, and the heading of the boat and its Track. The user information like Waypoints, Marks and Tracks can then be stored on a User C-CARD and can be recalled at any time. On the screen are shown navigation data and cartographic information obtained from electronic charts of C-MAP BY JEPPESEN C-CARD.

1.2 BASICS

The chart plotter is controlled by a keyboard: there are labelled keys and software keys (soft keys). The labelled keys are dedicated to specific functions, the

soft keys have different functions according to the modes of operation: their labels for the current functions, located on the front panel, are shown on the screen right above the keys. There is also a cursor key to move a cursor across the screen. As you press a key, a single audio beep confirms the key action; every time the key pressed is not valid, three rapid beeps sound indicates that no response is available.

1.3 IF YOU NEED ASSISTANCE

If your chart plotter does not operate properly, please refer to System Test. Most common operating difficulties can be diagnosed using these tests.

If you require further Technical Support on any Digital Yacht products please e-mail: support@digitalyacht.co.uk or call +44 (0) 1179 554474.

Please remember to report the information available in the System Information page, selected by following this procedure:

➢ **Press any soft key + 'SETTING' + "About..." + 'ENTER'**

2. Before You Begin

This chapter provides basic information to get you start using the chart plotter; it will help you to become familiar with the chart display and the functions of the controls before you start using the chart plotter.

2.1 THE KEYBOARD

The 'ZOOM IN' **and 'ZOOM OUT'** **keys**

Press 'ZOOM IN' shows more details of a smaller area, by changing the chart scale and zooming in on your display. Press 'ZOOM OUT' to operate similarly to the 'ZOOM IN', except in reverse, changing the scale and showing a wider, otherwise less detailed view.

The cursor **key**

Moves the cursor about on the display screen, quickly and accurately. It also scrolls the desired option in the menu page(s): up/down move the current menu selection; right executes the function assigned to the active selection in the menu (same as 'ENTER'). Up/down in the number/character input procedure changes the value, left/right move the cursor on the previous/next position.

If in Home (Navigate) mode, it allows to exit from Home mode.

The 'ENTER' **key**

Selects the desired option, confirms selection, creates Objects (Mark, Waypoint, MOB) and finds Information on Objects.

The 'CLEAR' **key**

Excluding specific situations, returns to the previous menu or leaves a menu without making changes. If you are not into a menu, if the GPS computing a valid fix position and the chart plotter is not in Home mode, pressing 'CLEAR' sets Home mode. When Home (called also Navigate) mode is set, the cursor is not shown anymore and all cartographic functions (zoom, scroll, etc.) are leaded by the fix position. The fix is centered in the map display and the map scrolls underneath as the fix position changes. To deactivate Home mode move the cursor.

The 'PAGE' **key**

Press 'PAGE' to select the configuration. After pressing 'PAGE', the Page selection menu (with current page selected) is shown on the screen.

Press and hold 'PAGE' for 1 second adjusts brightness and contrast and handles the Palette.

The 'GOTO' key

Allows to select the main navigation functions to a Target. The 'GOTO' key is an *auto-diagnostic* type because the associated menu disables automatically the menu items that are not allowed in that moment. A menu item is disabled when the label is shown in light grey color, otherwise if the item label is shown in black color, the item is enabled. An item is automatically disabled when the associated function is not allowed.

The Goto menu that appears after the 'GOTO' key pressing shows the following 6 items: "LAST GOTO", "CURSOR", "MARK", "ROUTE", "PORT SERVICES", "CLEAR GOTO".

The "LAST GOTO" item when selected shows a window with the coordinates of the previous inserted Target.

The "CURSOR" item is disabled when in Navigation mode (for the Navigation (Home) mode meaning see the 'CLEAR' key in this paragraph); this item is enabled only if the cursor is moved to the desired position for inserting Target.

The "MARK" item is disabled if no Mark has been stored.

The "ROUTE" item is disabled if no Waypoint has been stored.

The "PORT SERVICES" item is disabled if no C-CARD with charting data has been inserted.

The "CLEAR GOTO" is enabled only if a Target has been inserted and all other items are disabled (because the Target is present yet).

Another characteristic of the 'GOTO' key is the following: to confirm selection it is possible to press 'ENTER' or 'GOTO'. So you can set many navigation functions without moving finger from the 'GOTO' key. For example to set navigation to cursor, pressing 'GOTO' twice, or to delete navigation pressing this key for 3 times.

The software keys (soft keys)

The software keys (soft key) have different functions according to the modes of operation: their labels for the current functions, located on the front panel, are shown on the screen right above the soft key. When the soft key labels are shown, by pressing the associated soft key the relative function is executed. By pressing 'CLEAR' the four soft key labels disappear.

When the soft key labels are not shown and any menu is not open, by pressing one of the four soft keys their labels for the current functions are shown on the screen immediately above the soft keys:

'SETTING' : selects the Setting Menu
'MAP' : selects the Map Menu
'FOCUS' : is active only if the Fish Finder mode has been selected. Allows to select the active page among the charting page and the Fish Finder page.

The 'POWER' key

Press and hold 'POWER' down for 1 second to turn the chart plotter On. Press and hold 'POWER' down (once the chart plotter has been turned On) for 3 seconds turns the chart plotter Off.

The 'DATA' key

'DATA' is used to access some of the User Data related sub-pages. User Data

is defined as data that the chart plotter user has entered (Waypoints, Marks, Routes, etc.) or data coming in from other equipment via NMEA such as the data displayed in the configurable Databoxes.

2.2 TURNING THE CHART PLOTTER ON AND OFF

Before powering On the chart plotter, check for the correct voltage (10-35 volt dc) and the correct connections with the positioning instrument.

2.2.1 TURNING ON

➤ **Press and hold 'POWER' for 1 second**

The chart plotter emits one rapid beep sound and a title page is opened. After a few seconds, the Caution Notice pages is displayed, reminding you that the chart plotter is only an aid to navigation, and should be used with appropriate prudence (the electronic charts are not intended to substitute for the official charts). Then the GPS Status page is displayed (see Par. 3.1.4). Pressing **'CLEAR'** will take you to the normal chart display page.

2.2.2 TURNING OFF

Press 'POWER' and hold for 3 seconds: a countdown timer appears on the screen, if you release the key before the countdown timer reaches zero, the chart plotter will remain On.

2.3 FIRST SETUP PAGE

This menu allows you to configure the chart plotter and the external devices the first time the chart plotter is powered On. This information can be changed at any time either from the Setup menu (see Chapter 7) or by resetting the chart plotter. Select the correct setup option and press **'ENTER'**, when complete press **'Ok'** to exit.

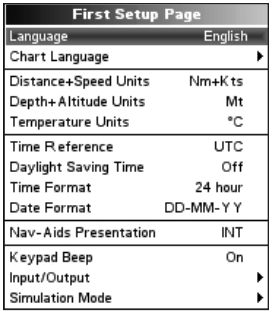


Fig. 2.3 - First Setup Page menu

The possible selections are listed in the table below:

Language	:	The map information will still be displayed in the language of the official digitalized paper chart.
Chart Language	:	Selects a sub-menu with two items: Language to set the language to display chart information and Mode to define how objects are translated.
Distance+Speed Units	:	Selects the unit for Distance and Speed (among Nm+Kts, Sm+Mph, Km+Kmh). The default setting is Nm+Kts.
Depth+Altitude Units	:	Selects the unit for Depth and Altitude among Ft and Mt. The default setting is Mt.
Temperature Units	:	Selects the unit among °C and °F. The default setting is °C.
Time Reference	:	Allows switching between UTC or local time, by entering the Local Time offset. The default setting is UTC.
Daylight Saving Time	:	Sets On/Off the Daylight Saving Time. The default setting is Off.
Time Format	:	Selects the format for the time between 12 and 24 hours. The default setting is 24 hours.
Date Format	:	Selects the Date Format between MM-DD-YY (month-day-year) and DD-MM-YY (day-month-year). The default setting is DD-MM-YY.
Nav-Aids Presentation	:	Allows to set the Nav Aids presentation as US (Draw Nav-Aids using NOAA symbology) or INTERNATIONAL (Draws Nav-Aids using international symbology). When selected it affects Lights, Signals, Buoys & Beacons display. The defaultt setting is INT.
Keypad Beep	:	Enables or disables the single audio beeps emitted any time the chart plotter keypad is pressed. If the incorrect key is pressed or the function required cannot be executed, the chart plotter emits three beeps. The default setting is On.
Input/Output	:	Allows to setup the devices that needs a dedicated port as C-COM, BBFF 50/200 and AIS 38400.
Simulation Mode	:	Allows to setup the simulation data before use the Simulation function.

2.4 LCD ADJUSTMENT

To adjust the brightness and contrast of the LCD screen follow the procedure:

➤ **'PAGE' for 1 second**

or:

➤ **Press any soft key + 'SETTING' + "LCD Adjustment" + 'ENTER'**

On the screen two control bars appear, that indicate the actual values for contrast and brightness.

The screen brightness can be controlled using the 'BRIGHT -' and 'BRIGHT +' soft keys: adjusting the control bar the backlight reaches the desired level. Press 'ENTER' to confirm the new value (the soft key and the graphic windows disappear from the screen). Otherwise pressing 'CLEAR' exits from this menu without changes. To modify the contrast value follow the same procedure, using the 'CONTR -' and 'CONTR +' soft key .

The new values for contrast and brightness are retained until they are reset.

2.4.1 PALETTE

It is possible to set the palette used to enhance the visibility of the screen depending on the surrounding light condition. To select this option:

➤ **'PAGE' for 1 second**

or:

➤ **Press any soft key + 'SETTING' + "LCD Adjustment" + 'ENTER' + 'PAGE'**

It is possible to select Normal, Sunlight, Night Vision or NOAA for Palette. **Normal** is recommended when the chart plotter is not exposed to the direct sunlight. When this mode is set the maps are displayed in order to use colors as similar as possible to the ones used in the original paper charts. **Sunlight** is designed to

enhance the visibility of the screen when the chart plotter is exposed to the sunlight. The maps are much brighter than in the other modes and the depth areas are filled with white color so different depth areas are not easily distinguishable. **Night Vision** is recommended when the environment is dark in order to reduce the glare of the display. The chart plotter displays maps and screen in darker colors. **NOAA** allows setting NOAA paper chart colors presentation.

2.5 SELECTING THE USER INTERFACE LANGUAGE

It is possible to set the language to display menus, data pages, warning/ alarm messages, full/quick info, list of objects found by find/nearest function, and on charts (such as place's names, buoy's names and so on).

To select the language you want:

➤ **Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "Language" + 'ENTER'**

Choose the language you prefer and press 'ENTER' to confirm.

Note

If the selected language is not available on cartographic data, English language is used instead.

WARNING

*If you have accidentaly selected an incomprehensible language, and you don't be able to reselect your language (the above procedure is not of help to you), follow this procedure: press the first soft key starting from left for two times,then move the cursor to highlight the first item (starting from the top) which corresponds to the Setup menu and press **'ENTER'**. Then a window appears with "Language" message, press **'ENTER'**: now select your language and press **'ENTER'** again. Anyway if you in trouble, see Chapter 7 "System Test" for a RAM Clear operation: the chart plotter will also return all selections, in particular language, to original default values.*

2.6 SELECTING THE CHART LANGUAGE

To select the language you want:

➤ **Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "CHART LANGUAGE" + 'ENTER'**

The possible choices are listed in the table below:

- LANGUAGE: Allows setting the language to display chart information. The language is chosen among the list of languages available on the cartographic data (C-CARD or embedded charts).
- MODE : Defines how objects are translated. It is possible to choose between the three following options:
  - **Off** Uses the same Language used for LANGUAGE. If the selected language is not present on the objects information, English is used instead;
  - **English** Always uses English;
  - **Local** Uses the first Local language present on data. If no Local language is available, English is used instead.

Note

a. When User Interface Language is changed, Chart Language settings are set as follows: MODE is set to Off and Chart Language is set as the User Interface Language selection if available on the chart data, otherwise is set to English.

b. If the cartographic data is changed (for example the C-CARD is removed or replaced), Chart Language settings should be verified and if necessary changed.

2.7 EXTERNAL CONNECTIONS

2.7.1 AUTOPILOT CONNECTIONS

To connect the Autopilot to the serial Port 1/2/3 . To choose your preferred setting follow the procedure:

➢ **Press any soft key + 'SETTING' + "Input/Output" + 'ENTER' + "Port 1/2/3 Output" + 'ENTER'**

Then choose your preferred setting among the NMEA available settings NMEA-0183 4800-N81-N, NMEA-0180, NMEA-0180/CDX (the default setting is NMEA-0183 4800-N81-N) and press 'ENTER' to confirm.

2.7.2 EXTERNAL NMEA CONNECTIONS

To connect the External NMEA to the serial Port 1/2/3. To choose your preferred setting follow the procedure:

➢ **Press any soft key + 'SETTING' + "Input/Output" + 'ENTER' + "Port 1/2/3 Input" + 'ENTER'**

Then choose your preferred setting among the NMEA available settings NMEA-0183 1200-N81-N, NMEA-0183 4800-N81-N, NMEA-0183 4800-N82-N, NMEA-0183 9600-N81-N, NMEA-0183 9600-O81-N (the default setting is NMEA-0183 4800-N81-N) and press 'ENTER' to confirm.

2.7.3 C-COM CONNECTIONS

To connect the modem C-COM to the chart plotter Port 1 verify that the Port 1 setting is the following:

➢ **Press any soft key + 'SETTING' + "Input/Output" + 'ENTER' + "Port 1 Input" + 'ENTER' + "C-COM" + 'ENTER'**

Note

The connection is valid for the C-COM IR and C-COM RS232 too.

Also the modem C-COM can be connected to the Ports 2, 3, in this case set the format for the selected Port.

2.7.4 EXTERNAL ALARM CONNECTION

Once the connection is active, to enable the External Alarm follow the procedure:

➢ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "External Alarm" + 'ENTER' + "ON" + 'ENTER'**

Note

The connection is available also on the AUX-IN I/O Port.

2.8 C-CARD

The chart plotter uses two types of C-MAP BY JEPPESEN cartridges: either a chart cartridge or a data storage cartridge. A chart cartridge, called C-CARD, contains detailed charts of the area covered. A data storage cartridge, called Memory C-CARD can be used to permanently store your Marks, Events, Waypoints, routes and tracks.

Note

During normal operations the C-CARD should not be removed since the chart plotter may lock up.

2.9 SIMULATION MENU

Used in order to use your chart plotter without input data. It generates a display with a moving vessel, so that you can practice using the controls in safety.

➤ **Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER'**

2.9.1 SIMULATION MODE

Enables (On) or disables (Off) the Simulation mode. The default setting is Off.

➤ **Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "SIMULATION MODE" + 'ENTER'**

2.9.2 SPEED

Sets the value for speed in the Simulation mode. The default setting is 01.0 Kts.

➤ **Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "SPEED" + 'ENTER'**

2.9.3 HEADING

Sets the desired value for heading in Simulation mode. The default setting is 000° M.

➤ **Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "HEADING" + 'ENTER'**

2.9.4 DATE

Sets the date of the simulated fix.

➤ **Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "DATE" + 'ENTER'**

2.9.5 TIME

Sets the time of the simulated fix.

➤ **Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "TIME" + 'ENTER'**

2.9.6 CURSOR CONTROL

Enables (On)/disables (Off) the cursor control. The default setting is Off.

➤ **Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "CURSOR CONTROL" + 'ENTER'**

3. For the New User

In order to get started using your chart plotter, you must do the following things:

1) Your chart plotter must have been installed properly according to the installation instruction.

2) You must have performed the proper settings for use with your positioning instrument and inserting the C-CARD for navigating in area you wish.

3) You must have Power On to the chart plotter and adjust the brightness and contrast of the display.

Once this is done, you can use your chart plotter for navigation.

3.1 SCREEN DISPLAY CONFIGURATION

The chart plotter can display lots of useful pages of information which are accessed by pressing

➤ **'PAGE'**

This displays the Page Selection menu, which shows all available and unavailable pages. Unavailable pages are shown in grey and cannot be accessed due to particular data or optional accessories not being available.

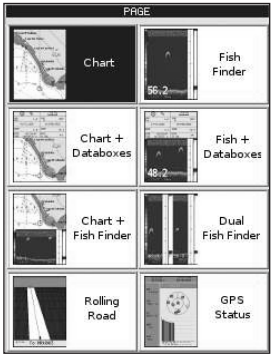


Fig. 3.1 - Example of Page Selection menu

Move the cursor to select the available page you want and the press **'ENTER'**. In the following paragraphs are displayed examples of these pages.

Note that if the Fish Finder pages are not available, the Chart + Fish Finder, full Fish Finder and Fish + Data boxes pages are respectly replaced by Chart + Depth, full Depth and Depth + Data boxes pages, if valid NMEA-0183 depth data is available. If the Fish Finder is present, then the Depth pages are not shown in this page.

At the same time as these pages displayed, it is possible to show on the screen the display of chart and/or navigation information. Press

➤ **'DATA'**

it cycles between the following sub-pages. Pressing **'CLEAR'** from any of these sub-pages, returns you to the currently selected main page, see the following figure:

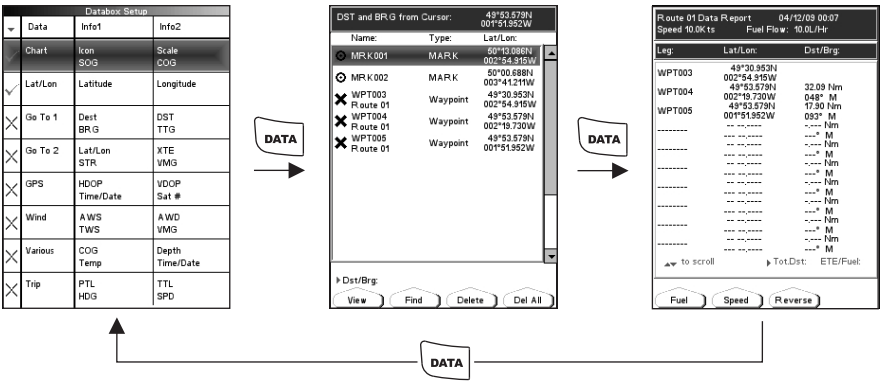


Fig. 3.1a - Example of Data pages

Data Box Setup	:	Selects the desired configuration for the data window, allowing to select the number of lines (max 4) and the values that are shown in the Text Area. The first column says that the line is displayed (3) or not (5): moving the cursor up and down select the desired line and using 'ENTER' to select it. It is possible to select max 4 lines. After pressing 'ENTER' the data type has been selected.
User Points List	:	Displays information on all stored User Points (Marks and Waypoints).
Route Report	:	Displays information on Routes.

3.1.1 CHART PAGE

It is very important to know what is displayed on the screen.

➤ **'PAGE' + "Chart" + 'ENTER" + 'CLEAR"**

shows the chart at full screen:

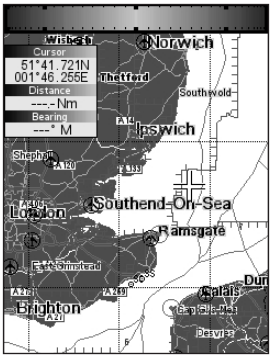


Fig. 3.1.1 - Example of Chart page

3.1.2 CHART+DATA BOXES PAGE

It is possible to display the chart and the selected Data Boxes on the screen:

➤ **'PAGE' + "Chart+Data Boxes" + 'ENTER" + 'CLEAR"**

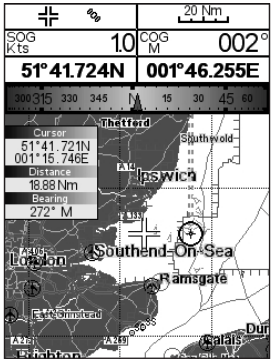


Fig. 3.1.2 - Example of Chart+Data Box page

3.1.3 ROLLING ROAD PAGE

The Rolling Road page displays the navigation data in graphic mode. It is possible to set the information in the page according to the user requirements.

➤ **'PAGE' + "Rolling Road" + 'ENTER' + 'CLEAR'**

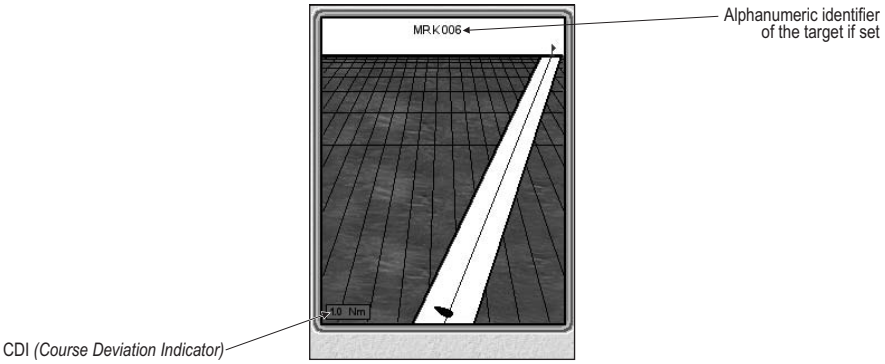


Fig. 3.1.3 - Example of Rolling Road page

3.1.4 GPS STATUS PAGE

The GPS data page shows in graphic mode GPS data.

➤ **'PAGE' + "GPS Status" + 'ENTER" + 'CLEAR"**

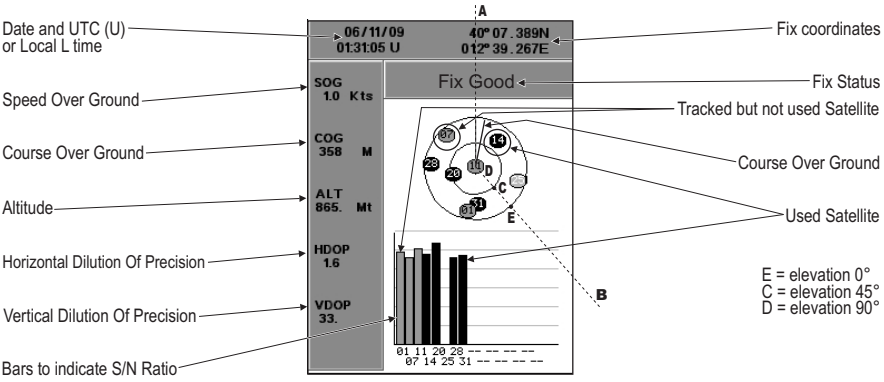


Fig. 3.1.4 - Example of GPS Status page

On the top side of the screen, there is a polar representation of the azimuth and elevation of each satellites. The circle contains a number indicating the PRN of the satellite and it is filled when it is used for the fix solution. On the bottom side there are histograms indicating the S/N ratio (SNR). The bar is filled when the satellite is used for solution. When a valid fix is received, the Lat/Lon, Date, Time, HDOP, VDOP, SOG, COG and Altitude are shown in the page.

3.1.5 DEPTH GRAPH PAGES[1]

The Depth Graph can be selected in three different modes: in a reduced form with chart, in a reduced form with Data boxes, or at full screen.

To select the Depth Graph with chart follow the procedure:

➤ **'PAGE' + "Chart+Depth" + 'ENTER" + 'CLEAR"**

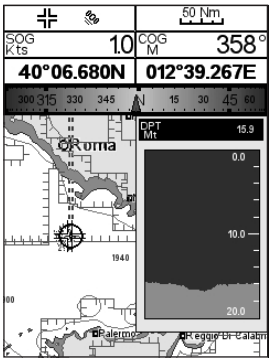


Fig. 3.1.5 - Example of Depth Graph with charts

and to select the Depth Graph with Data Boxes:

➤ **'PAGE' + "Chart+Data Boxes" + 'ENTER" + 'CLEAR"**

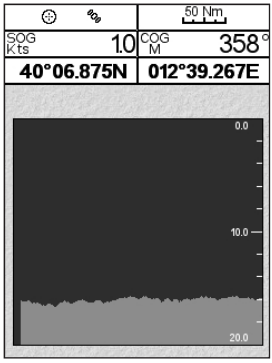


Fig. 3.1.5a - Example of Depth Graph with Data Boxes

Otherwise to select the Depth Graph at full screen, select:

➤ **'PAGE' + "Depth" + 'ENTER' + 'CLEAR'**

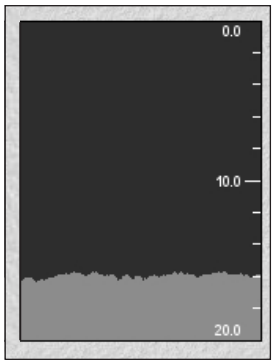


Fig. 3.1.5b - Example of Depth Graph at full screen

Note[1]

If valid NMEA-0183 depth data is not available, or the Fish Finder is present, Chart + Depth, full Depth and Depth + Data boxes pages are respectly replaced by the Chart + Fish Finder, full Fish Finder and Fish + Data boxes pages.

3.2 MAP ORIENTATION

Selects the orientation of your chart according to: North Up (the map is shown with North upwards) or Track Up (the map is displayed with the currently selected course leg upwards). The default setting is North Up.

➤ **Press any soft key + 'SETTING' + "Setup" + 'ENTER' + "Map Orientation" + 'ENTER'**

If Track Up has been selected, a window is shown to insert the Map Resolution.

3.3 NAVIGATING TO A SINGLE DESTINATION

3.3.1 DISTANCE AND BEARING TO TARGET

Place the cursor on location to navigate to and press 'GOTO', select "CURSOR" and press 'GOTO' again or 'ENTER'.

A straight line is shown on the screen connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

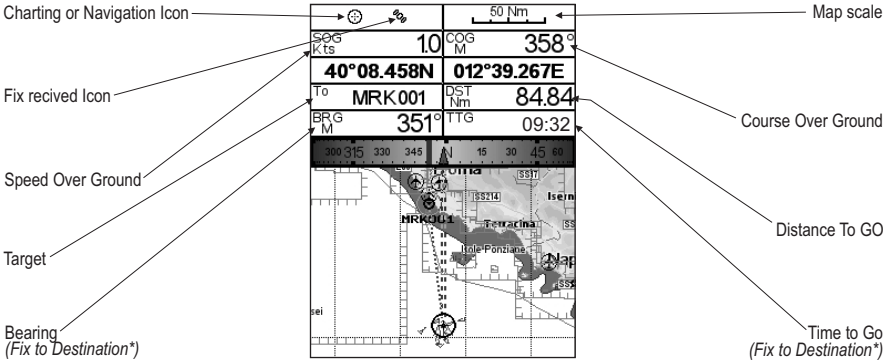


Fig. 3.3.1 - Navigation to a single destination

3.3.2 TIME TO GO

When the Target is set the TTG value (if selected) is displayed in the Text Area (see Fig. 3.4.1).

3.3.3 DELETING TARGET

Place cursor on Target icon, press 'STOP'. A window to confirm the navigation interruption appears on the screen. Press 'ENTER' or 'GOTO': the symbol that identifies Target remains on the screen until it is redrawn.

3.4 NAVIGATION ON A ROUTE

It is possible to define several positions, Waypoints, in a sequence called route and to navigate follow the route towards the end point.

3.4.1 ADDING WAYPOINT

To create a Waypoint place the cursor on the desired position, press 'ENTER', select "WAYPOINT", press 'ENTER' again. The Waypoint is shown on the screen and it becomes the first point of the first route. A window with information on route number, symbol and name, Latitude/Longitude of Waypoint is shown on the screen. Also it is indicated the distance to cover (and/or covered, if there are several Waypoints) refer to the next Waypoint.

3.4.2 CREATING A ROUTE

Repeat the "Adding Waypoint" procedure described in the previous Par. 3.5.1. The sequence of moving the cursor and pressing 'ENTER' is continued to create the route, until you have reached the last Waypoint, your final destination. Segments connecting the Waypoints are shown, and the starting point is identified by a circle surrounding the first Waypoint of the route; the distance to cover is shown too.

3.4.3 DELETING WAYPOINT

To delete the Waypoint, place the cursor on the desired Waypoint, press 'DELETE'. Press 'ACCEPT' to confirm the deletion. The Waypoint is deleted and a new line between previous and next Waypoint is shown. The deleted Waypoint remains shaded until the screen is redrawn.

When the cursor is placed on the desired starting Waypoint (it can be the first Waypoint of the route or not) press 'GOTO', select "CURSOR" and press 'GOTO' again or 'ENTER'. The Waypoint symbol is shown enclosed in a circle and a dot line connecting the Target with the ship. All navigation data are referred to the Target placed.

The Target automatically is moved on the next Waypoint on the route when the Target is reached.

Otherwise placing the cursor on Target and pressing 'NEXT' the Target is moved on the next Waypoint on the route. The cursor is moved on the actual Waypoint Target (if the Target is placed on the last Waypoint on the route 'NEXT' is not active). When the cursor is on the Target, pressing 'PREVIOUS' the Target is moved on the previous Waypoint in the route. The cursor is moved on the actual Waypoint Target (if the Target is on the first Waypoint of the route 'PREVIOUS' is not active).

3.4.4 TIME TO GO

When the Target is placed the TTG value (if selected) is shown in the Text Area.

3.4.5 DELETING TARGET

Place cursor on Target icon, press 'STOP'. A window to confirm the navigation interruption appears on the screen. Press 'ENTER' or 'GOTO': the symbol that identifies Target remains the screen until it is redrawn.

3.5 C-MAP BY JEPPESEN MAX CARTOGRAPHY INFORMATION

MAX is a major evolution of the product technology. Key points are:

3.5.1 DATA FEATURES

- **ISO Certification** *(electronic chart production process with quality certification)*
- **Extra Large Coverage** *(all the C-MAP BY JEPPESEN electronic chart detail and a huge coverage without having to change cartridge)*
- **Official data source** *(data based on use of official data sources)*
- **Detailed World Background** *(worldwide background chart with details)*
- **Depths & Land Elevation** *(color shading of sea depth and land altitude for improved chart reading)*

- **Bathymetric & Spot Soundings** *(additional Data Base with depth and bathy information for an extraordinary view of the seabed depth)*
- **Detailed Port Plan** *(complete port and marina charts with detail)*
- **Search & Find** *(quickly locates chart contents and objects)*
- **Tides Preview** *(dynamic simulation of tides)*
- **Dynamic Currents** *(current arrows dynamically display direction and speed)*
- **Dynamic Nav-Aids** *(displays Nav-Aids in true color and with real interval lighting)*
- **Port Info** *(all the information of the available services in the ports and how to contact them)*
- **Enhanced Port Info & Roads** *(details of the available facilities and services in ports and surrounding areas)*
- **Object Info** *(indicates restricted area details and related information)*
- **Quick Info** *(full information on objects, buoys, wrecks, shoals and Nav-Aids)*
- **Photos & Diagrams** *(high definition pictures of ports, piers, bridge diagrams and nav-aids)*
- **Multilanguage Support** *(displays charts in the local character set)*
- **True-Type Font** *(improves text on chart for optimal reading)*

3.5.2 PRESENTATION FEATURES

- **Clear View** *(advanced legibility techniques providing more chart data on the screen)*
- **Clear Info** *(sophisticated "Human Dictionary" to translate Nav-Aid abbreviations found on paper charts)*
- **Dynamic Nav-Aids** *(an innovative and dynamic presentation mode)*
- **Flexi-Zoom** *(increased Under and Over Zoom between chart levels, resulting in optimal scale display for any situation)*
- **Dynamic Elevation Data** *(optimized palettes including the NOAA color palette)*
- **Perspective View** *("Real World" perspective view of the chart, updated real-time during navigation)*
- **Smooth-Zoom** *(smooth transition of cartographic levels)*
- **Enhanced Turbo-Zoom** *(extra fast cartography level change displaying the most important cartographic objects)*
- **Enhanced Mixing Levels** *(seamless data presentation)*
- **Off-line redraw** *(cartography level transition without image construction)*

3.5.3 CARTOGRAPHIC DATA RELATED FEATURES

- **Guardian Alarm** *(automatic control and alarm over obstacles on charts in front of your boat)*
- **Safety Toolbar** *(interactive alarm system for situational awareness on screen)*
- **Safety Route Check** *(sophisticated function checking dangerous objects along your navigation route)*

3.6 BACKGROUND CHARTS

The internal background charts can be updated to include the MAX A and B level charts which provide improved marine data, rivers, lakes, terrestrial data (major streets , highways , railways, etc...), nav-aids, depth areas, territorial water areas, etc... by reading them from a special data C-CARDs (contact your local dealer).

3.7 PICTURES & DIAGRAMS

The MAX data format allows assigning one or more image to any cartographic object. These *Pictures* are typically used to facilitate the identification of cartographic objects or places around the map: they can be the landscape layout nearby a harbor, the shape of a bridge or of a buoy etc.

On some objects, such as bridges, the image associated can represent the *Diagram* representing the shape of the objects and the various characteristics (length, height, type of bridge etc.).

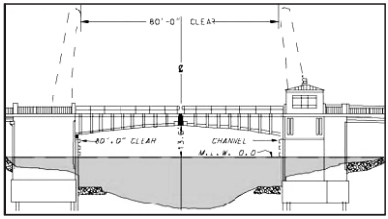


Fig. 3.7 - Pictures and Diagrams

3.7.1 QUICK INFO ON OBJECTS WITH PICTURES

On the Quick Info, there will be the camera icon on the top bar of the window if at least one of the objects found has one or more pictures associated.

3.7.2 EXPANDED INFO ON OBJECTS WITH PICTURES

On the Full Info, there will be the small camera icon on a corner of the square containing the object icon or a big photo icon centered on the square for the object without icon.

To see the picture press **'PICTURE'** when the object with a picture is highlighted.

3.7.3 CHANGE PICTURE SIZE

When the picture is shown, it is possible to fit it to screen by pressing 'ENTER'.

3.8 MAP MENU

To select the map configuration (available only from the chart page):

➤ **Press any soft key + 'MAP'**

3.8.1 ZOOM TYPE

➤ **Press any soft key + 'MAP' + "Zoom Type" + 'ENTER'**

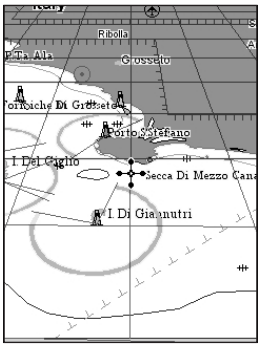
Allows larger expansion or compression of the chart scale while zooming in or out. Zoom Type has two options; Standard (default) or Flexi-Zoom. When in Flexi-Zoom mode, a short **'ZOOM...'** push causes a change of chart, whilst a long **'ZOOM...'** push (press and hold) causes a pop-up window to be displayed on a corner of the screen. The window shows the current Zoom Factor. By pressing **'ZOOM IN'/'ZOOM OUT'** the map is expanded or compressed according to the zoom factor selected. The Window is automatically closed if **'ZOOM...'** is not pressed for 2 seconds and the selected zoom factor will be used at the next zoom in/out.

3.8.2 FONTS & SYMBOLS

➤ **Press any soft key + 'MAP' + "Fonts & Symbols" + 'ENTER'**

It is possible to set the size of all names and symbols drawn on the charts, selecting between Normal size (the regular characters size) and Large size.

NORMAL size



LARGE size

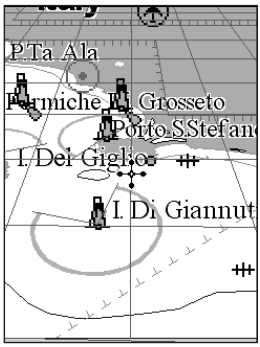


Fig. 3.8.2 - Example of Normal size (on the left side) and Large side (on the right side) settings

3.8.3 PERSPECTIVE VIEW

➤ **Press any soft key + 'MAP' + "Perspective View" + 'ENTER'**

Chart data may be projected in perspective mode during navigation. This function allows setting the panoramic view of the chart. As the upper side of the map is more compressed than the lower side, a wider map area is visible. The perspective view allows showing more chart information immediately ahead and around the cursor.

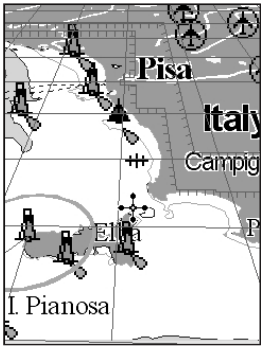


Fig. 3.8.3 - Perspective View

3.8.4 DYNAMIC NAV-AIDS

➤ **Press any soft key + 'MAP' + "Dynamic Nav-Aids" + 'ENTER'**

This function allows settings blinking lights on Nav-Aids. The blinking period and color of each Nav-Aid is read from the Nav-Aid attributes available on the data cartridge. When the ship is inside the Nav-Aid nominal range, the light of the Nav-Aid will start blinking.

3.8.5 MIXING LEVELS

➤ **Press any soft key + 'MAP' + "Mixing Levels" + 'ENTER'**

When the map coverage at the current zoom level does not fill the entire screen, the chart plotter draws the rest of the map expanding the cartographic information read from, at most, two zoom levels above the current zoom level. For this reason the map is drawn three times: firstly it draws the two levels before the current level and then the current level. The area covered by the cartographic data read from the previous levels is identified by a dotted pattern. When the cursor is moved on an area not covered by data of the current level the chart plotter zooms out to the first level covered by cartographic data. The default setting is Off.

Note

The Mixing Levels function affects the speed of the redraw of the screen. If this function is not used it maybe disabled.

3.8.6 SAFETY STATUS BAR (DSI = Data Safety Indicator)

➤ **Press any soft key + 'MAP' + "Safety Status Bar" + 'ENTER'**

The possible choices are listed in the table below:

- ON : the Safety Status Bar is shown
- OFF : the Safety Status Bar is not shown
- ICON : the Safety Status Bar is not shown, but a Warning alarm Icon will blink on the corner of the map screen as soon as any item controlled by the DSI (**D**ata **S**afety **I**ndicator) function returns an alarm condition. The Warning Icon remains displayed until the alarm condition persists.

When Safety Status Bar is On, a status bar with six boxes showing the status of certain functions is displayed. Any warning or alarm condition is identified by the red color to indicate possible risk.

Fig. 3.8.6 - Safety Status Bar

Boxes definition is as follows:

(1) **Zoom**

Normal : when the chart is displayed at normal scale.
U. Zoom : red when the chart is under-zoomed out more than twice normal scale, gray otherwise.
O. Zoom : red when the chart is over-zoomed in more than twice normal scale, gray otherwise.
Chart Lock : red when the chart is zoomed in more than twice normal scale, gray otherwise.

(2) **Best Map**

Red when a more detailed chart is available under the cursor position.

(3) **Data Off**

Red when at least one of the following objects or layers is turned off (by the

user): Depths/soundings; Wrecks/obstructions; Tracks/routes; Attention areas; Nav-Aids.

④ **Declutter**
Displays when Clear View function is On.

⑤ **Dangers**
Red when “Guardian Technology” detects one of the following objects: Land, Intertidal, Depth Area, Rocks, Obstructions, Shoreline Constructions, Fishing Facility, Wrecks, Dredged area, Diffusion area, Mooring facilities, Pingos and Production installations.

⑥ **Caution**
Red when “Guardian Technology” detects cautionary or restricted area.

3.8.7 SATELLITE IMAGERY

➤ **Press any soft key + 'MAP' + "Satellite Imagery" + 'ENTER'.**

It is possible to overlay the Satellite image for background map. When it is set On, the Palette is set to Normal to display the proper colors.

3.8.8 CURRENTS PREDICTION

➤ **Press any soft key + 'MAP' + "Currents Prediction" + 'ENTER'.**

It is possible to see the variation of the Tidal arrows on the selected area at any given time. A window is shown on the low-left side of the chart, press 'SET' to set data and time, and 'DECR'/'INCR' to decrease/increase the time. Press 'EXIT' to exit.

3.9 INFO FUNCTION

Place the cursor on the desired position then:

➤ **Press any soft key + 'MAP' + "INFO" + 'ENTER'**
to display the Info tree and the expanded Info page.

3.9.1 INFO TREE AND EXPANDED INFO PAGE

This page combines the Info Tree and the Expanded Info pages; this gives the advantage of showing the details of the object selected on the Info Tree while the cursor is moving through the Info Tree’s items.

The upper side of the page contains the Info Tree and the Lower side contains the expanded information. While moving the cursor through the Info Tree, all the relevant information of the selected object is shown on the lower part of the page.

When the selected object is a Tide Height, pressing 'ENTER' the Tide page is shown. Pressing 'CLEAR' the page is closed. To select the next page press 'PAGE DN'. 'HOME' restarts the Expanded Info function.

3.9.2 GETTING TIDE INFO

To obtain Tide Info:

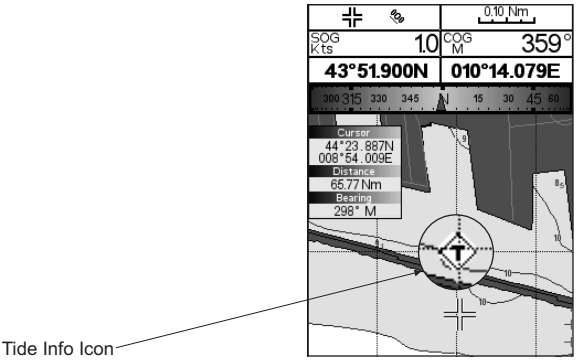


Fig. 3.9.2 - Tide Info icon

Place the cursor on the Tide symbol, a automatic Info window is opened:

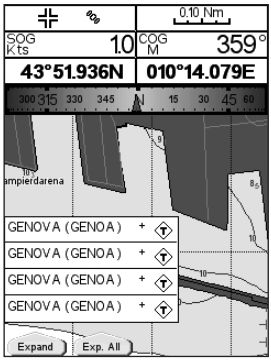


Fig. 3.9.2a - Automatic Info on Tide

To display the Tide Graph page press 'EXPAND' then 'ENTER' (otherwise press 'EXP ALL' to select all available information).

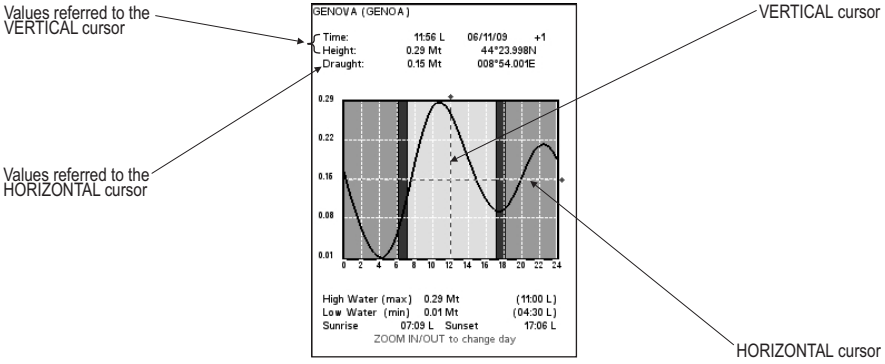

Values referred to the VERTICAL cursor
Values referred to the HORIZONTAL cursor
VERTICAL cursor
HORIZONTAL cursor
GENOVA (GENOA)
Time: 11:56 L 06/11/09 +1
Height: 0.29 Mt 44°23.998N
Draught: 0.15 Mt 008°54.001E
0.29
0.22
0.16
0.08
0.01
0 2 4 6 8 10 12 14 16 18 20 22 24
High Water (max) 0.29 Mt (11:00 L)
Low Water (min) 0.01 Mt (04:30 L)
Sunrise 07:09 L Sunset 17:06 L
ZOOM IN/OUT to change day

Fig. 3.9.2b - Tide Graph

Using the cursor key, it is possible to move the cursor anywhere on the graph and display the time, height (vertical cursor) and drought (horizontal cursor) on a particular graph point. Also use 'ZOOM IN' or 'ZOOM OUT' to go to previous or

next day and 'ENTER' to set date (move the cursor key up/down to insert the desired number and use it left/right to move cursor to left/right).

Note

Tide graphs are an approximation of the tide and they should be used in conjunction with traditional tide tables and navigational methods.

3.9.3 GETTING PORT INFO

Upon viewing the chart of a port or harbor, you will see a Port Info icon that can be clicked on to query the available information immediately displayed with many details.

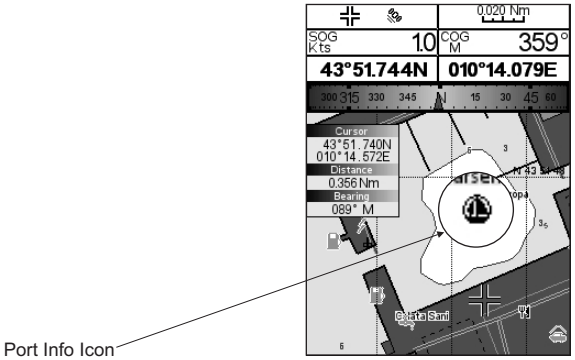


Fig. 3.9.3 - Port Info icon

The available information is shown in the Automatic Info window where icons of the available services are shown:

Fig. 3.9.3a - Automatic Info window

To expand information on the object press 'EXPAND' (otherwise press 'EXP ALL' to select all available information).

3.9.4 ENHANCED PORT INFO

MAX charts include additional port services that were not present before. Additional attributes of Port Areas and Port Marinas have been included (Location, Country, Region, State, Harbor master telephone number etc).

3.10 MAP SETTINGS

This menu allows the user to customize the screen:

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER'**

3.10.1 DISPLAY MODE

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER'**

Selects from a predefined table what cartographic objects are displayed and which display options are set. Preprogrammed settings are user selectable from Full, Medium, Low, Radar, Tides, Custom.

The table below shows the selections for each mode:

Setting	Full	Medium	Low	Radar	Tides	Custom (Default values)
Place Names	On	On	On	On	On	On
Name Tags	On	Off	Off	Off	Off	Off
Nav Aids & Light Sectors	On	No Sector	No Sector	No Sector	Off	On
Attention Areas	On	On	Off	Off	Off	On
Tides & Currents	On	Off	Off	Off	On	On
Seabed Type	On	Off	Off	Off	Off	On
Ports & Services	On	On	Off	On	Off	On
Tracks & Routes	On	Off	Off	Off	Off	On
Depth Range Min	0 Mt	0 Mt	0 Mt	0 Mt	0 Mt	0 Mt
Depth Range Max	9999 Mt	9999 Mt	9999 Mt	9999 Mt	9999 Mt	9999 Mt
Land Elevation	On	On	Off	Off	Off	On
Land Elevation Values	On	Off	Off	Off	Off	On
Roads	On	Off	Off	Off	Off	On
POI	On	Off	Off	Off	Off	On
Lat/Lon Grid	On	Off	Off	Off	Off	On
Chart Boundaries	On	Auto	Off	Off	Off	Auto
Value-Added Data	On	Off	Off	Off	Off	On
Chart Lock	On	On	On	On	On	On
Underwater Objects Limit	9999 Mt	10 Mt	10 Mt	10 Mt	10 Mt	10 Mt
Rocks	Icon+Depth	Icon	Icon	Icon	Icon	Icon
Obstructions	Icon+Depth	Icon	Icon	Icon	Icon	Icon
Diffusers	Icon+Depth	Icon	Icon	Icon	Icon	Icon
Wrecks	Icon+Depth	Icon	Icon	Icon	Icon	Icon

The following are the available selections only if Custom has been selected:

Place Names: Turns On/Off the displaying of the Names. The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Place Names" + 'ENTER'**

Name Tags: Displays a tag for particular chart objects that either includes the Name of the chart object or the Depth of an Underwater chart object. Already available for Buoys, the feature has now been extended for Towers, Beacons and Port Marinas. The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Name Tags" + 'ENTER'**

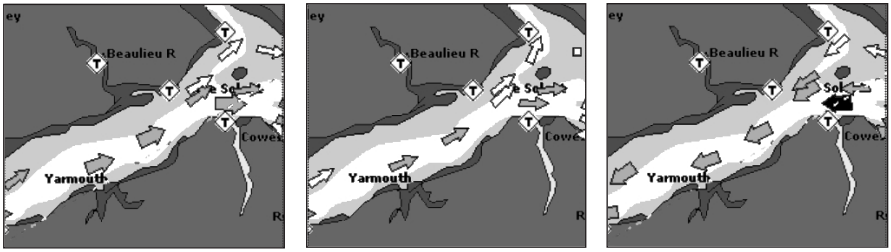
Nav-Aids & Light Sectors: Turns On (Nav-Aids & Light Sectors are shown)/Off (Nav-Aids & Light Sectors are not shown)/No Sector (Nav-Aids are shown, Light Sectors are hidden). The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Nav Aids & Light Sectors" + 'ENTER'**

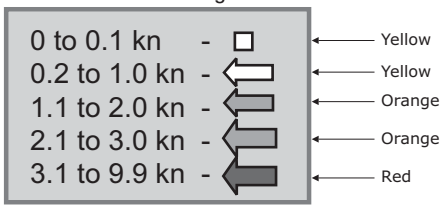
Attention Areas: Enables (On) or disables (Off) the displaying of the Attention Areas (areas in which special attention by the mariner is required, because of natural or man-made hazards, or sailing regulations and restrictions).

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Attention Areas" + 'ENTER'**

Tides & Currents: On/Off. The worldwide database with tidal stream information is available with MAX C-CARDs.



When data/time is available, Tidal stream arrows are shown on the charts, indicating the direction and strength of the Tide. If no data/time is available from the GPS or the chart plotter is not in Simulation mode, the icon on the map is generic one. The color of the arrow denotes the strength of the current as follows:



➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Tides & Currents" + 'ENTER'**

Seabed Type: Turns On/Off the displaying of the Seabed Type. The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Seabed Type" + 'ENTER'**

Port & Services: To locate and display the nearest available facilities of a particular type (i.e. the nearest Hospital, sailmaker, bank, etc.). The icons list of the available services is shown on the screen.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Port & Services" + 'ENTER'**

Tracks & Routes: Turns On/Off the displaying of Tracks and Routes (recommended and established routes for ships at sea, including traffic separation schemes, deep water routes, ...). The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Tracks & Routes" + 'ENTER'**

Depth Range Min: Allows to insert a minimum value for the depth range.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Depth Range Min" + 'ENTER'**

Depth Range Max: Allows to insert a maximum value for the depth range.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Depth Range Max" + 'ENTER'**

Land Elevation: It is possible to set On/Off the Land Elevation display. The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Land Elevation" + 'ENTER'**

Land Elevation Value: It is possible to set On/Off the Land Elevation Values display. The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Land Elevation Value" + 'ENTER'**

Roads: Enables or disables the displaying of Roads on the screen.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Roads" + 'ENTER'**

POI: Enables or disables the displaying of POIs (Points Of Interest). The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "POI" + 'ENTER'**

Lat/Lon Grid: Turns On/Off the displaying of the Latitude and Longitude Grids. The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Lat/Lon Grid" + 'ENTER'**

Chart Boundaries: Enables (On) or disables (Off) the displaying of the Chart Boundaries. Selecting Auto instead, if we are in background charts only the first charts level contained in the C-CARD are displayed, if we are in a charts level contained in the C-CARD the next four charts level are displayed. The default setting is On.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Chart Boundaries" + 'ENTER'**

Value-Added Data: The Value Added Data (VAD) is a collection of additional cartographic objects which are not present on the original paper chart (from which the electronic chart derives). These objects have been obtained from other sources and then merged to the electronic charts in order to provide more information useful for the navigation.

VAD object can be any cartographic objects and it can be distinguished from the official-chart-objects from the Quick Info. A dedicated icon is shown on the Quick Info window to indicate that the object queried is a VAD.

The same icon is also shown on the Full Info page and in addition the extended text Value Added Data is shown on the details of the VAD object.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Value-Added Data" + 'ENTER'**

Chart Lock: When Chart Lock is On, the available zoom scales are only the ones containing cartographic data. Instead when Chart Lock is Off, it is possible to zoom down into zoom scales not covered by cartographic data after the last available zoom scale covered by cartographic data.

Note

When an empty level is entered, the message "No cartographic coverage" is shown on a window in a corner of the map display. The warning message is always displayed as long as the current zoom has no data coverage.

The DSI window, if present, will show "NO CHART", when an empty level is entered in the location of map expansion mode.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Chart Lock" + 'ENTER"**

Underwater Object Limit: Selects the max depth value to display Underwater Objects.

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Underwater Object Limit" + 'ENTER'**

If value is set to 0 Mt, the Underwater Objects are not shown on the charts. Menu options are grayed out.

If value is more than 0 Mt (i.e. 10 Mt), in the Range from 0 Mt to the selected value the Underwater Objects are displayed according to their setting below.

Rocks:Turns Off/Icon/Icon+Depth (*).

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Rocks" + 'ENTER'**

Obstructions: Turns Off/Icon/Icon+Depth (*).

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Obstructions" + 'ENTER'**

Diffusers: Turns Off/Icon/Icon+Depth (*).

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Diffusers" + 'ENTER'**

Wrecks: Turns Off/Icon/Icon+Depth (*).

➤ **Press any soft key + 'MAP' + "Other Map Configurations" + 'ENTER' + "Display Mode" + 'ENTER' + "Custom" + 'ENTER' + "Wrecks" + 'ENTER'**

Note*

Choose the option:

OFF : the object is not visible independently of the selected "Underwater Object Depth Value"

ICON : the object icon is visible without tags, in the range selected from "Underwater Object Depth Value" option

ICON+DEPTH : the object icon and tag is visible, in the range selected from "Underwater Object Depth Value" option

3.10.2 GETTING AUTOMATIC INFO

The type of Automatic Info is user selectable.

➤ **Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "Auto Info" + 'ENTER'**

The possible settings are:

- **Off** : disabled, no automatic info shown at all
- **On Points** : only on points. This is the default setting
- **On All** : on all objects (points, lines and areas)

The Automatic Info On Points shows information when the cursor is placed on points (as Port Services, Tides, lights, wrecks, rocks, buoys, beacons, obstructions, land markers, etc.). The Automatic Info On All shows information when the cursor is placed on points, on lines (as Depth contours, Traffic Separation, Territorial Sea, Cartographic Lines etc.) on areas (Depth, Built-up, Sea, Attention, Restricted etc.) and on names (on the beginning of the text -hot spot- or on any of the characters of the name -name message box-). The details on Land, Source of Data, Cartographic Area and Spot Soundings are not shown.

If you press 'EXPAND' you get the information about that object. Otherwise press 'EXP ALL' to select all available information.

3.10.2.1 Quick Info on Lakes

Upon viewing the chart of a lake, you will click on to query the available information immediately displayed with many details. Example: see the following picture:

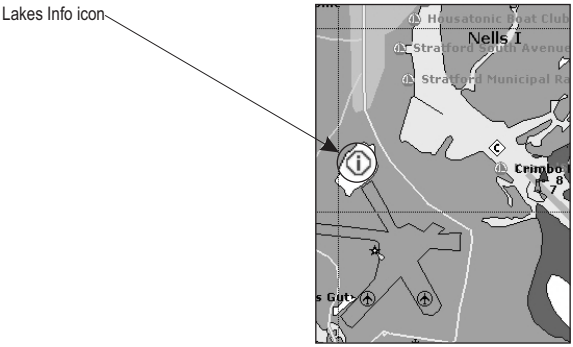


Fig. 3.10.2.1 - Example of Lakes info

When the cursor is placed over the icon, the icons of the available services are shown:

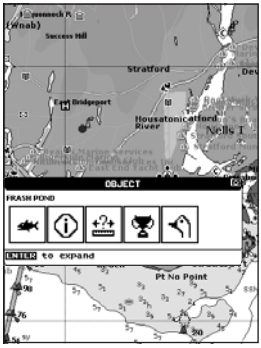


Fig. 3.10.2.1a - Quick Info: available services

If you press 'EXPAND' all available information about the cartographic point under the cursor will be shown. See the next paragraph.

3.10.2.2 Full Info on Lakes

The following is an example of Full Info on Lakes:

Fig. 3.10.2.2 - Example of Full Info page

To see the "Fishing" object press 'PAGE' (when the "Fishing" object is highlighted). On the screen appears:

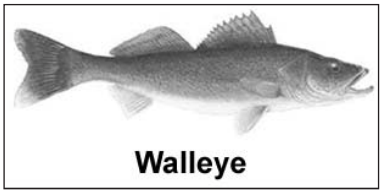


Fig. 3.10.2.2a - Example of picture associated to the Fishing object

3.11 FIND FUNCTION

The chart plotter allows to find and display on the screen the nearest and available objects: Port Services, Port By Name, Port By Distance, Tide Stations, Wrecks, Obstructions, Cursor, Lakes Info, Lakes By Name, Points of Interest, Coordinates and User Points. The researche of these objects referes to the boat position (if a valid fix is received) or to the cursor position (if the received fix position is not valid).

3.11.1 FINDING PORTS SERVICES

To select the research of Ports Services (up to 10) (i.e. the nearest Hospital, sailmaker, bank, etc.) following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER' + "Port Services" + 'ENTER'**

The icons of the available services are shown. Use the cursor key to select any facility and press 'ENTER' or 'FIND'. The list of the nearest ports containing the facility will be shown on the screen. Then choose the port you want and press 'ENTER' or 'FIND'.

3.11.2 FINDING PORTS BY NAME

To select the research of Ports By Name following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER'+ "Port by Name" + 'ENTER'+ "Search Port" + 'ENTER'**

Shows the list in alphabetical order of all ports stored on the C-CARD. To select next/previous page press 'ZOOM IN'/'ZOOM OUT' or use the cursor key up/down to slide in the list; otherwise press 'NAME' and use the cursor key to manually insert the name of port. Press 'ENTER' or 'FIND' to locate it on the map.

Note

To filter the list, select the distance range by following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER' + "Port by Name" + 'ENTER' + "Range" + 'ENTER'+ Insert the desired value**

3.11.3 FINDING PORTS BY DISTANCE

To select the research of Ports By Distance (up to 10) following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER'+ "Port by Distance" + 'ENTER'**

Shows the list of ports stored on the C-CARD in closest distance order. Use the cursor key up/down to select one of them and press 'ENTER' or 'FIND' to locate it on the map.

3.11.4 FINDING TIDE STATIONS

To select the research of Tide Station (up to 10) following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER' + "Tide Stations" + 'ENTER'**

Shows the list of Tide Stations. Choose one of them and press 'ENTER' or 'FIND' to display the Tide Graph page). Press 'CLEAR' to locate on the map the Tide Station chosen.

3.11.5 FINDING WRECKS

To select the research of Wrecks (up to 10) following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER' + "Wrecks" + 'ENTER'**

Shows the list of wrecks stored on the C-CARD in closest distance order. Use the cursor key up/down to select one of them and press 'ENTER' or 'FIND' to locate it on the map.

3.11.6 FINDING OBSTRUCTIONS

To select the research of Obstructions (up to 10) following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER'+ "Obstructions" + 'ENTER'**

Shows the list of obstructions stored on the C-CARD in closest distance order. Use the cursor key up/down to select one of them and press 'ENTER' or 'FIND' to locate it on the map.

3.11.7 FINDING LAKES INFORMATION

To select the research of Lakes Information following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER'+ "Lakes Info" + 'ENTER'**

It founds the Outdoor Recreational Area objects. See the following picture:

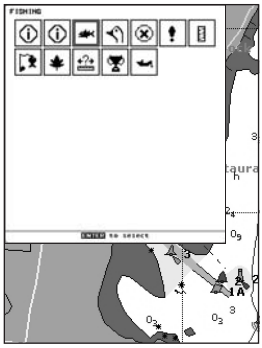


Fig. 3.11.7 - Outdoor Recreational Area objects

Use the cursor key to select any objects and press 'EXPAND'. The list of the nearest lakes (up to 10) containing the facility will be shown on the screen.

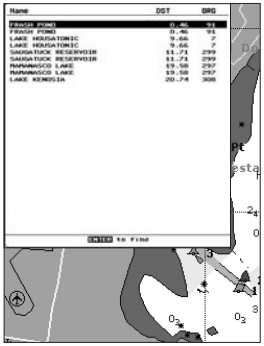


Fig. 3.11.7a - Nearest Lakes list

Choose the lake you want and press 'EXPAND': the Full Info page is shown.

3.11.8 FINDING LAKES BY NAME

To select the research of Lakes By Name following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER'+ "Lakes by Name" + 'ENTER'+ "Search Lakes" + 'ENTER'**

Shows the list in alphabetical order of all lakes stored on the C-CARD. To select next/previous page press 'ZOOM IN'/'ZOOM OUT' or use the cursor key up/down to slide in the list; otherwise press 'NAME' and use the cursor key to manually insert the name of lake. Press 'ENTER' or 'FIND' to locate it on the map.

Note

To filter the list, select the distance range by following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER' + "Lakes by Name" + 'ENTER' + "Range" + 'ENTER' + Insert the desired value**

3.11.9 FINDING POINTS OF INTEREST

To select the research of Points of Interest (POI) following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER'+ "Points of Interest" + 'ENTER'**

A sub-menu is shown to find different categories of POIs. Use the cursor key to select the category and press 'ENTER' to display the list of points. Press 'ENTER' again to locate the point on the map.

3.11.10 FINDING CURSOR

To select the research of Cursor position following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER'+ "Cursor" + 'ENTER'**

Shows the cursor placing it on the center of the screen.

3.11.11 FINDING COORDINATES

To select the research of Coordinates following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER' + "Coordinates" + 'ENTER'**

Use the cursor key to manually insert the coordinates and press 'ENTER' o 'CONFIRM' to locate them on the map.

3.11.12 FINDING USER POINTS

To select the research of User Points following the procedure:

➤ **Press any soft key + 'MAP' + "Find" + 'ENTER'+ "User Points" + 'ENTER'**

Use the cursor key to manually insert the user point name and press 'ENTER' or 'CONFIRM' to locate it on the map.

3.12 ALARMS MENU

Sets the desired values/settings for the alarms.

3.12.1 AUTO OFF

To set the automatic shutdown of the alarms when the alarm condition disappears. The default setting is On.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "Auto Off" + 'ENTER'**

3.12.2 ARRIVAL ALARM

To set an acoustic alarm to sound when the vessel is approaching the destination. Specifies the radius of a circle around the Waypoint of a route: when your vessel reaches this circle the alarm sounds. You can disable (Off) the Arrival Alarm or insert value. The default setting is 4.99 Nm.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "Arrival Alarm" + 'ENTER'**

3.12.3 XTE ALARM

To set an acoustic alarm to sound when the vessel is deviating from a defined course. The default setting is Off.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "XTE Alarm" + 'ENTER'**

3.12.4 ANCHOR ALARM

This function allows inserting of the limit of anchor dragging: beyond that, the alarm is activated. The chart plotter computes the distance between the current GPS position and the GPS position saved at the activation of the anchor alarm in the menu. If the computed distance exceeds the value set in the menu, the chart plotter shows the alarm message and starts the acoustic alarm. The default setting is Off.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "Anchor Alarm" + 'ENTER'**

3.12.5 DEPTH ALARM

This function is used to set an acoustic alarm automatically triggered when the depth value read by the depth transducer is too shallow. The default setting is Off.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "Depth Alarm" + 'ENTER'**

3.12.6 HDOP ALARM

This function is used to show a warning when the received HDOP value exceeds the Alarm Limit for more than 2 seconds. The default setting is Off.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "HDOP Alarm" + 'ENTER'**

3.12.7 HEADING ALARM

This function is used to show a warning when the HDG sentence is not received from a magnetic sensor reading. The default setting is Off.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "Heading Alarm" + 'ENTER'**

3.12.8 GROUNDING ALARM

The chart plotter is provided with a function that, by querying the map's data, verifies potential danger to navigation due to shallow water, land, rocks, obstructions and shoreline constructions. The maps are scanned periodically (every 10 seconds). When the Grounding Alarm is active, the chart plotter scans an area in front of the boat. This area is identified by a triangle drawn in front of the boat icon whose direction is determined by the current boat heading. The length of the triangle is user selectable and its angle is 30 degrees. If any of the above objects are found, the chart plotter notifies the danger on a dedicated warning message box in the Grounding Alarm Report page. The Grounding Alarm is switched Off by default after a Master Reset. Once the Grounding Alarm has been activated, a warning message is shown.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "Grounding Alarm" + 'ENTER'**

3.12.9 GROUNDING ALARM RANGE

Allows setting the length of the sector to be detected among 0.25, 0.5, 1.0 Nm. The default setting is 0.5 Nm. When any of the searched objects is found in the scanned area, a tick marker is printed on the relative box in the Grounding Alarm Report page to identify which dangerous objects have been currently detected.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "Grounding Alarm Range" + 'ENTER'**

3.12.10 GROUNDING ALARM REPORT

Allows displaying the report of the dangerous objects currently detected.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "Grounding Alarm Report" + 'ENTER'**

3.12.11 EXTERNAL ALARM

When any alarm condition occurs the pin is switched from High Impedance to ground. This signal can be used by an external device (as a hooter or buzzer). The default setting is On.

➤ **Press any soft key + 'SETTING' + "Alarms" + 'ENTER' + "External Alarm" + 'ENTER'**

4. For the Experienced

Now you have had a chance to became familiar with your new chart plotter, there are a great number of advanced features that you will find helpful.

4.1 MORE ABOUT CREATING AND USING ROUTES

At anytime, you may add or delete Waypoints, see a route summary, reverse the direction of the route or erase the entire route.

4.1.1 ROUTES

To select the Routes menu:

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER'**

The following functions are used for the route management.

4.1.1.1 Selecting Route

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Select" + 'ENTER'**

A window appears with the route number list and the related route name. Select the route number. The following functions are available:

Changing Notes

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Select" + 'ENTER'+ 'NOTES'**

Another window is opened: insert the notes (it is possible only if the route is already created). Press 'ENTER' or 'CONFIRM' ('CLEAR' or 'CANCEL' otherwise).

Route Color

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Select" + 'ENTER' + 'COLOR'**

A window allows to choose the color, by using the cursor key. Press 'ENTER' or 'CONFIRM' ('CLEAR' or 'CANCEL' otherwise).

Displaying Route

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Select" + 'ENTER' + 'HIDE'/ 'SHOW'**

The function allows to hide/show the segment that joins the Waypoints.

4.1.1.2 Deleting Route

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Delete" + 'ENTER'**

A window is opened: press 'ENTER' or 'CONFIRM' ('CLEAR' or 'CANCEL' otherwise). The route remains on the screen shaded until the screen is redrawn.

4.1.1.3 Finding Info on Route: Route Data Report

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Report" + 'ENTER'**

The following functions are available:

Changing Fuel values

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Report" + 'ENTER' + 'FUEL'**

- **Initial Fuel:** insert value by using the cursor key. Press 'CLEAR' to confirm.
- **Fuel:** insert value by using the cursor key to insert the forecast consumption (liters per hour). Press 'CLEAR' to confirm.

Press 'CLEAR' to confirm and to return to the previous menu.

Changing Speed values

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Report" + 'ENTER' + 'SPEED'**

- **Manual:** insert value by using the cursor key. Press 'ENTER' or 'ACCEPT' ('CLEAR' or 'CANCEL' otherwise).
- **Auto:** is used the value automatically computed.

Reversing Route

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Report" + 'ENTER' + 'REVERSE'**

Reversing a route plan is most typically used to return to the point where the route originally started.

4.1.1.4 Route Color

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Color" + 'ENTER'**

A window allows to choose the color, by using the cursor key. Press 'ENTER' or 'CONFIRM' ('CLEAR' or 'CANCEL' otherwise).

4.1.1.5 Sending Route

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Send" + 'ENTER'**

It transmits the Active route information onto the NMEA output port. The NMEA WPL & RTE messages are sent to the output port.

4.1.1.6 Receiving Route

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Receive" + 'ENTER'**

It saves route information received from the NMEA input port. The received route is saved on the Active route, overwriting it. The NMEA WPL & RTE messages are sent to the input port.

4.1.1.7 Safe Route Checking

This function checks the presence of particular cartographic objects (see the list below) on a range set by the user for all route legs:

- Land Areas
- Shallow Water
- Intertidal Areas
- Rocks
- Wrecks
- Obstructions
- Shoreline Constructions
- Fishing Facility
- Dredged Areas
- Diffusers
- Mooring/Warping Facility
- Production Installation
- Pingos
- No Data Available

If any of these alarm conditions is detected, then the chart plotter highlights the list of dangerous objects and the correspondant dangerous route leg. The route leg is then drawn in a different color.

It is possible to make the Safe Route Check from menu following the procedure:

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Route Check Report" + 'ENTER'**

or:

➤ **Place the cursor on the desired Route leg + 'CHECK'**

The list of the dangerous objects found on the charts crossed by the route is shown in the Route Check Report.

It is also possible to activate this function in automatic mode:

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Automatic Route Check" + 'ENTER' + "On" + 'ENTER'**

If Automatic Route Check is activated, the modified route legs are checked everytime a Waypoint is added, inserted, edited or moved.

Before activating the function, you could change the function parameters, as the width and the depth of the detected area and the research accuracy.

To select the width of the detected area aside the route:

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Route Width" + 'ENTER' + insert the desired value + 'ENTER'**

Note

Safe Route width value represents half the total width checked by the function.

To select the depth of the detected area aside the route:

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Route Depth" + 'ENTER' + insert the desired value + 'ENTER'**

It also possible to select the accuracy for the route check, among Minimum, Low, Medium, High and Maximum:

➤ **Press any soft key + 'SETTING'+ "Route" + 'ENTER' + "Route Check Accuracy" + 'ENTER'**

4.1.2 WAYPOINTS

You may add Waypoints (see Par. 3.4.1), delete Waypoints from a route, move any Waypoint in the route to another location, insert a Waypoint between two existing ones, find any Waypoint at anytime.

4.1.2.1 Adding Waypoints

➤ **'ENTER' + "WAYPOINT" + 'ENTER'**

The Waypoint appears on the cursor position. An info window is shown containing route number, date and time, Waypoint name, symbol and Latitude/Longitude, information on previous/next Waypoint. It is also shown the distance to cover (and/or covered, if there are several Waypoints) refer to next Waypoint. The sequence of moving the cursor and pressing 'ENTER' selecting "WAYPOINT" and pressing 'ENTER' again is continued to create the route.

Every time you place the cursor on a Waypoint, the following functions are available.

4.1.2.2 Moving Waypoint

➤ **Adding Waypoint ('ENTER' + "WAYPOINT" + 'ENTER') or Place cursor on Waypoint**

Press 'MOVE'. Use the cursor key to move the cursor: a dotted line, connecting the Waypoint to the new position, is shown.

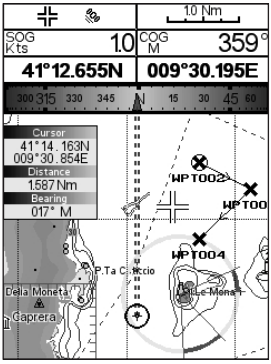


Fig. 4.1.2.2 - Moving Waypoint function (I)

Press 'ENTER' or 'CONFIRM' ('CLEAR' or 'CANCEL' otherwise) and the Waypoint will be placed in the new position.

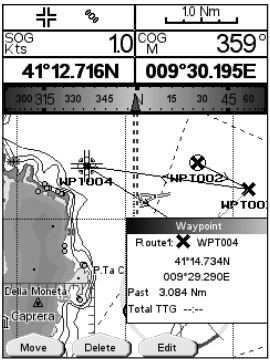


Fig. 4.1.2.2a - Moving Waypoint function (II)

The "old" Waypoint remains on the screen shaded until the screen is redrawn.

4.1.2.3 Deleting Waypoint

➤ **Adding Waypoint ('ENTER' + "WAYPOINT" + 'ENTER') or Place cursor on Waypoint**

Press 'DELETE'. A window is opened: press 'ENTER' or 'CONFIRM' ('CLEAR' or 'CANCEL' otherwise). The Waypoint is deleted and a new line between previous and next Waypoint is shown. The deleted Waypoint remains shaded until the screen is redrawn.

4.1.2.4 Editing Waypoint

➤ **Adding Waypoint ('ENTER' + "WAYPOINT" + 'ENTER') or Place cursor on Waypoint**

Press 'EDIT'. A window will be shown with Symbol, Name, Color and Latitude/ Longitude of the Waypoint.

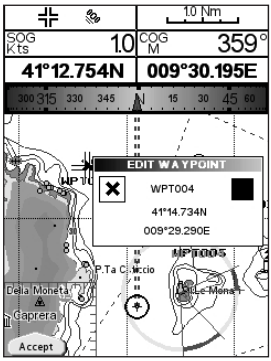


Fig. 4.1.2.4 - Edit Waypoint

Use the cursor key to select the field.

If Symbol field is selected, press 'ENTER': a window with 16 different symbols appears.

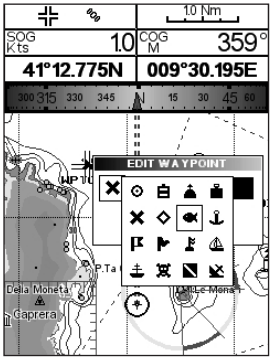


Fig. 4.1.2.4a - Waypoint symbos

Use the cursor key to select the symbol and press 'ENTER'.

If Name field is selected, press 'ENTER': use the cursor key to insert the character (8 characters max), then press 'ENTER'.

If Color field is selected, press 'ENTER': a window with 8 different colors appears. Use the cursor key to select the color and press 'ENTER'.

If Coordinates field is selected, press 'ENTER'. Use the cursor key to insert the value and press 'ENTER'.

Press 'ENTER' or 'ACCEPT' ('CLEAR' or 'CANCEL' otherwise).

4.1.2.5 Goto

➤ **Adding Waypoint ('ENTER' + "WAYPOINT" + 'ENTER') or Place cursor on Waypoint**

Press 'GOTO', select "CURSOR" and press 'GOTO' again or 'ENTER': a circle surrounds the Waypoint symbol. A line is shown, connecting the Target with the ship's position. When the Target is placed, all navigation data are referred to this Target.

Pressing 'GOTO', selecting "PREVIOUS GOTO" and pressing 'GOTO' again or 'ENTER', a windows apears on the screen containing coordinates of previous inserted Target. Select the desired Target and press 'GOTO' again or 'ENTER': the Target is placed on the selected previous Target.

Otherwise pressing 'GOTO', selecting "ROUTE" and pressing 'GOTO' again or 'ENTER, the Target is placed on the first Waypoint of the route.

Note that pressing 'GOTO', selecting "MARK" and pressing 'GOTO' again or 'ENTER', the User Points List is shown on the screen. Select the desired User Point (the Waypoint) and press 'GOTO' again or 'ENTER': the Target is placed on the selected Waypoint.

4.1.2.6 Inserting Waypoint

Every time you place the cursor on the segment connecting two existing Waypoints of a route the following function is available.

➤ **Place cursor on route leg**

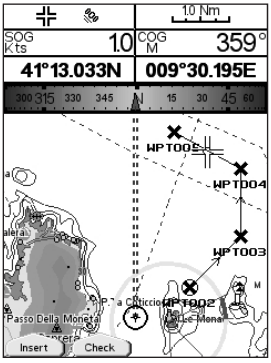


Fig. 4.1.2.6- Placing Waypoint between two existing ones (I)

Press 'INSER'. The line between the two Waypoints is turned into a dotted line: move the cursor to the new position. When the cursor is stationary for one second or two, the line will "rubberband", drawing a dotted line between the last Waypoint and the cursor, and another dotted line between the cursor and the next Waypoint:

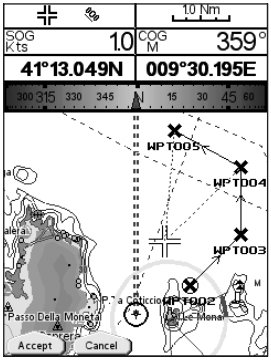


Fig. 4.1.2.6a - Placing Waypoint between two existing ones (II)

Once you have positioned the cursor at new location, press 'ENTER' or 'ACCEPT' ('CLEAR' or 'CANCEL' otherwise).

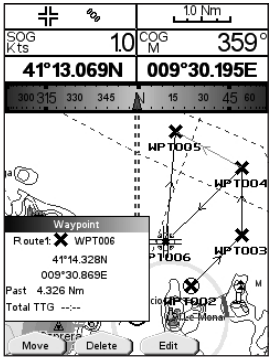


Fig. 4.1.2.6b - Placing Waypoint between two existing ones (III)

4.1.2.7 Finding Waypoint

➤ **Press any soft key + 'MAP' + "FIND" + 'ENTER' + "USER POINTS" + 'ENTER'**

A window is shown to find the Waypoint inserting label. Using the cursor to insert the name and press 'ACCEPT' ('CANCEL' otherwise). For example, if the inserted name is W005, the cursor will be placed on this Waypoint, and the window containing route information is shown.

4.1.2.8 Finding information on Waypoints: User Points List page

➤ **'DATA' + "LIST" + 'ENTER'**

➤ **Press any soft key + 'SETTING' + "LIST" + 'ENTER' + "LIST" + 'ENTER'**

A full page window is shown with information on stored User Points. Moving cursor up/down to select the desired User Point.

Note

In the list a circle surrounds the User Point symbol of the User Point on which the Target is set.

View Waypoint on the map

➤ **Press any soft key + 'SETTING' + "LIST" + 'ENTER' + "LIST" + 'ENTER' + 'VIEW'**

The chart plotter exits from the User Points List page and redraws the map. On the screen the selected point appears centered, with the cursor placed on it. Press 'EXIT' to return to the User Points List page.

Find Waypoint in the User Points List page

➤ **Press any soft key + 'SETTING' + "LIST" + 'ENTER' + "LIST" + 'ENTER' + 'FIND'**

A window is shown to insert the name by using the cursor key. Press 'ENTER' and the chart plotter will point the Waypoint out in the User Points List page.

Deleting Waypoint

➤ **Press any soft key + 'SETTING'+ "LIST" + 'ENTER' + "LIST" + 'ENTER' + 'DELETE'**

Using the cursor key to select the Waypoint to delete and press 'DELETE'. A warning message appears, press 'ENTER' or 'YES' ('CLEAR' or 'NO' otherwise). If you want to delete the Waypoint on which Target is set, first delete the Target and then delete the Waypoint.

Deleting all stored User Points

➤ **Press any soft key + 'SETTING' + "LIST" + 'ENTER' + "LIST" + 'ENTER' + 'DEL ALL'**

A warning message appears. Press 'ENTER' or 'YES' ('CLEAR' or 'NO' otherwise) to delete all stored existed User Points. If a Target is set on an User Point, first delete the Target and then delete all User Points.

4.1.2.9 Send Waypoints

To transmit all User Points onto the NMEA output port.

➤ **Press any soft key + 'SETTING' + "LIST" + 'ENTER' + "SEND" + 'ENTER'**

4.1.2.10 Receive Waypoints

To save all User Points received from the NMEA input port.

➤ **Press any soft key + 'SETTING'+ "LIST" + 'ENTER' + "RECEIVE" + 'ENTER'**

4.2 MARKS

You may tag a location on the chart with a Mark symbol and number, which you can record for later use.

4.2.1 ADDING MARK

➤ **'ENTER' + "MARK" + 'ENTER'**

The new Mark appears on your cursor position. An info window containing Mark symbol, name and Latitude/Longitude is shown.

Every time you place the cursor on a Mark the following functions are available:

4.2.2 MOVING MARK

➤ **Adding Mark ('ENTER' + "MARK" + 'ENTER') or Place cursor on Mark**

Press 'MOVE'. Use the cursor key to move the cursor: a dotted line, connecting the Mark to the new position, is shown. Press 'ENTER' or 'CONFIRM' ('CLEAR' or 'CANCEL' otherwise) and the Mark will be placed in the new position. The "old" Mark, remains on the screen shaded until the screen is redrawn.

4.2.3 DELETING MARK

➤ **Adding Mark ('ENTER' + "MARK" + 'ENTER') or Place cursor on Mark**

Press 'DELETE'. A window is opened: press 'ENTER' or 'CONFIRM' ('CLEAR' or 'CANCEL' otherwise). The deleted Mark remains shaded until the screen is redrawn.

4.2.4 EDIT MARK

➤ **Adding Mark ('ENTER' + "MARK" + 'ENTER') or Place cursor on Mark**

Press 'EDIT'. A window will be shown with Symbol, Name, Color and Latitude/Longitude of the Mark.

Use the cursor key to select the field.

If Symbol field is selected, press 'ENTER': a window with 16 different symbols appears.

Use the cursor key to select the symbol and press 'ENTER'.

If Name field is selected, press 'ENTER': use the cursor key to insert the character (8 characters max), then press 'ENTER'.

If Color field is selected, press 'ENTER': a window with 8 different colors appears. Use the cursor key to select the color and press 'ENTER'.

If Coordinates field is selected, press 'ENTER'. Use the cursor key to insert the value and press 'ENTER'.

Press 'ENTER' or 'ACCEPT' ('CLEAR' or 'CANCEL' otherwise).

4.2.5 GOTO

➤ **Adding Mark ('ENTER' + "MARK" + 'ENTER') or Place cursor on Mark**

Press 'GOTO', select "CURSOR" and press 'GOTO' again or 'ENTER': a circle surrounds the Mark symbol. A line is shown, connecting the Target with he ship's position. When the Target is placed, all navigation data are referred to this Target.

Otherwise pressing 'GOTO', selecting "MARK" and pressing 'GOTO' again or 'ENTER', the User Points List is shown on the screen. Select the desired User Point (the Mark) and press 'GOTO' again or 'ENTER': the Target is placed on the selected User Point.

4.2.6 FINDING MARK

➤ **Press any soft key + 'MAP' + "FIND" + 'ENTER' + "USER POINTS" + 'ENTER'**

A window is shown to find the Mark inserting label. Using the cursor to insert the name and press 'ACCEPT' ('CANCEL' otherwise).

4.2.7 FINDING INFORMATION ON MARKS: USER POINTS LIST

➤ **Press any soft key + 'SETTING' + "LIST" + 'ENTER' + "LIST" + 'ENTER'**

A full page window is shown with information on stored User Points (Mark e Waypoint). Moving cursor up/down select the desired User Point. See the previous Par. 4.1.2.8.

4.2.8 SEND MARKS

To transmit all User Points into the NMEA output port.

➤ **Press any soft key + 'SETTING' + "LIST" + 'ENTER' + "SEND" + 'ENTER'**

4.2.9 RECEIVE MARKS

To save all User Points received from the NMEA input port.

➤ **Press any soft key + 'SETTING' + "LIST" + 'ENTER' + "RECEIVE" + 'ENTER'**

4.3 USING THE TRACK FUNCTIONS

The chart plotter can be set up for recording your track as you move and for plotting this track on the chart.

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER'**

4.3.1 ENABLING TRACK STORING

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "ACTIVATE" + 'ENTER'**

To enable the track storing. It is not possible to use the track storing if you are not receiving a valid fix.

To disable the track storing (if the track is enabled):

➤ **Press any soft key + 'SETTING'+ "TRACK" + 'ENTER' + "DEACTIVATE" + 'ENTER'**

4.3.2 DELETING TRACK

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "DELETE" + 'ENTER'**

Delete the all track or only a part. 'WHOLE', 'BEGIN' and 'END' allow to identify the begin and end points of the segment to be delete.

4.3.3 CONFIGURATION MENU

➤ **Press any soft key + 'SETTING' +"TRACK" + 'ENTER' + "CONFIG" + 'ENTER'**

4.3.3.1 Selecting Active Track

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "ACTIVE TRACK" + 'ENTER'**

Select the number of the active track. The default setting is 1.

4.3.3.2 Displaying Track

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "DISPLAY MODE" + 'ENTER'**

Select to display (VISIBLE) or not (HIDDEN) the track. The default setting is VISIBLE.

4.3.3.3 Selecting Track Color

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "COLOR" + 'ENTER'**

Select the desired color for the selected track. The default setting is BLACK.

4.3.3.4 Selecting Track memorizing type

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "STEP UNIT" + 'ENTER'**

Select the DISTANCE (the chart plotter can store a fix when the distance from its last stored position is greater than a defined distance) or TIME (the chart plotter can store a fix after a defined time). The default setting is TIME.

4.3.3.5 Selecting Time

➤ **Press any soft key + 'SETTING' +"TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "TIME" + 'ENTER'**

When the tracking function is On and the type of track storing is Time, the chart plotter can store a fix after a defined time. It allows to choose among 1, 5, 10, 30 sec, 1, min. The default setting is 1 sec.

4.3.3.6 Selecting Distance

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "DISTANCE STEP" + 'ENTER'**

When the tracking function is On and the type of track storing is Distance, you can store a fix when the distance from its last stored position is greater than a defined distance. It allows to choose in the range 0.01, 0.05, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0 Nm (the distance unit is selected by the user, see Cap. 5). The default setting is 0.01 Nm.

4.3.3.7 Deleting All Tracks

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "DELETE ALL TRACKS" + 'ENTER'**

A warning window appears: press 'ENTER' or 'YES' ('CLEAR' or 'No' otherwise).

4.3.4 DELETING TOTAL AND PARTIAL DISTANCE (LOG)

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "LOG" + 'ENTER'**

It is possible to reset the total and partial distance that the ship has traveled from the begin of the navigation. Press 'TOTAL' to reset the total LOG or 'PARZ' to reset the partial LOG.

4.3.5 TRACK TO ROUTE CONVERSION

This function creates a route from a pre-recorded Track. To select this menu:

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "TRACK TO ROUTE" + 'ENTER'**

A new window appears on the screen with the following options.

4.3.5.1 Track to Route

Executes the function that converts the given Track into a route.

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "TRACK TO ROUTE" + 'ENTER' + "TRACK TO ROUTE" + 'ENTER'**

4.3.5.2 Advanced Menu

Allows setting the parameters used by the function Track To Route.

➤ **Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "TRACK TO ROUTE" + 'ENTER' + "ADVANCED" + 'ENTER'**

- **Select Track No.:** selects the Track input number.
- **Select Route No.:** selects the Route output number.
- **Off Course:** sets the conversion accuracy.
- **Dist Waypoints:** sets the minimum distance between Waypoints.

4.4 MEMORY CARD MENU

The chart plotter allows to copy information to an User C-CARD. You can also return the information to internal memory at a later time. This allows virtually unlimited storage.

➤ **Press any soft key + 'SETTING'+ "MEMORY CARD" + 'ENTER'**

4.4.1 SAVING FILE

➤ **Press any soft key + 'CONFIG' + "MEMORY CARD" + 'ENTER' + 'SAVE'**

Select the data type to save pressing respectively 'MARK', 'EVENT', 'ROUTE' or 'TRACK'. A window is opened with a default name shown: use the cursor key to insert the desired name and press 'ENTER' or 'ACCEPT' ('CLEAR' or 'CANCEL' otherwise).

Note

When naming a file, you may have trouble finding a name that uniquely identifies the file's contents. Dates, for example, are often used in filenames; however, they take up several characters, leaving you with little flexibility. The secret is to find a compromise, a point where you can combine a date with a word, creating a unique filename. The maximum length of the filename is 8 characters. The characters may be numbers (0, ..., 9), letters (A, ..., Z) and spaces (for example legal identifiers are "ABC", "AA", "12121212", "A B C", "1 A 1", and so on.

4.4.2 LOADING FILE

➤ **Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'LOAD'**

In the list choose the file name using the cursor key and press 'LOAD'.

4.4.3 DELETING FILE

➤ **Press any soft key + 'SETTING'+ "MEMORY CARD" + 'ENTER' + 'DELETE'**

A warning window is shown, press 'ENTER' or 'ACCEPT' ('CLEAR' or 'CANCEL' otherwise). This operation remove old or unnecessary files to clean up your User C-CARD. Remember that this option permanently erases the file.

4.4.4 CARTRIDGE

➢ **Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'CARTR.'**

4.4.4.1 Reading Directory on User C-CARD

➢ **Press any soft key + 'SETTING'+ "MEMORY CARD" + 'ENTER' + 'CARTR.' + 'READ'**

Appears the list of the files present on the User C-CARD inserted. During the reading, if it is going well, the message "READING DIR .. OK" appears in the frame in the right bottom corner.

4.4.4.2 Formatting User C-CARD

➢ **Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'CARTR.' + 'FORMAT'**

A warning window is shown, press 'ENTER' or 'ACCEPT' ('CLEAR' or 'CANCEL' otherwise). The formatting of the User C-CARD must be done before using a new User C-CARD: this operation prepares the User C-CARD to receive and store information.

4.4.4.3 Sorting Directory

➢ **Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'CARTR.' + 'SORT BY'**

Sort files in the directory. This is possible in the following modes:

- Press 'NAME' to sort using file name
- Press 'TIME' to sort using the file creation time
- Press 'TYPE' to sort using the file data

5. Special Functions

5.1 C-WEATHER SERVICE

C-Weather Service is an innovative meteorological forecasting system with the ability to visualize the weather forecast, overlaying it on cartography. The weather data is held on Jeppesen Marine's weather server, which can be accessed via a C-COM modem connected to the chart plotter or by using the PC Planner (or the DPS - Dealer Programming System) saving the weather data on a User C-CARD. The weather data are overlaid on a map page as layers. The weather format data available are:

Data Type	Display
WIND (Speed & Dir)	0
WAVE Height & Dir	1
TEMPERATURE	18°
HUMIDITY (%)	30
VISIBILITY	20
WEATHER TYPE: Sun	
WEATHER TYPE: Rain	
WEATHER TYPE: Fog	
WEATHER TYPE: Snow	
WEATHER TYPE: Clouds	
WEATHER TYPE: Partly Cloudy	
WEATHER TYPE: Thunderstorm	

Fig. 5.1 - Weather data package

5.1.1 C-WEATHER SERVICE MENU

To select the menu:

➤ **Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER'**

The C-Weather menu is shown on the screen, the items are described in the following paragraphs.

5.1.1.1 Load From File

➤ **Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER'+ "LOAD FROM FILE" + 'ENTER'**

Allows the C-Weather data loading from the User-CARD.

5.1.1.2 Download

➤ **Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER'+ "DOWNLOAD" + 'ENTER'**

Allows to connect the software to the Jeppesen Marine weather server and to download Jeppesen Marine weather data directly via C-COM. It activates the following sub-menu:

Select Country to Call
Allows the selection of the country to call. The whole telephone number set is automatically updated after every download.

Telephon number
Shows the telephon number to get through to the server.

SIM PIN
Allows inserting of the PIN relating of the SIM.

Download Area
Allows the weather download: a squared grey area, where the weather data will be downloaded, is centered on cursor position.

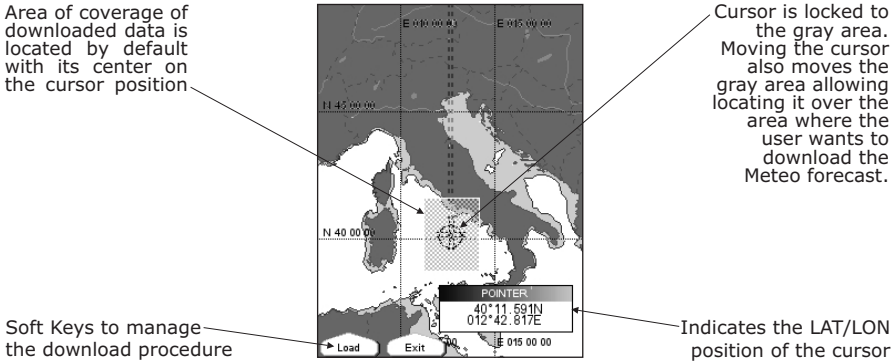

Area of coverage of downloaded data is located by default with its center on the cursor position
Cursor is locked to the gray area. Moving the cursor also moves the gray area allowing locating it over the area where the user wants to download the Meteo forecast.
N 40 00 00
POINTER
40°11.591N
012°42.817E
Load
Exit
E 015 00 00
Soft Keys to manage the download procedure
Indicates the LAT/LON position of the cursor

Fig. 5.1.1.2 - Area of coverage

Press 'LOAD' to activate the C-Weather Download: the whole data package (see the previous "Weather data package" table) are downloaded. 'STOP' allows to interrupt the data download. At the end of the operation press 'EXIT' to close the window.

5.1.1.3 Weather Forecast

➤ **Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER'+ "FORECAST" + 'ENTER'**

Allows selecting the Layer of specific weather data to be displayed on the screen and to change date and time of the forecast preview.
The following functions are available:

- **Panning:** Default usage of the cursor key is the normal panning function.
- **Zoom In/Out:** allowed as usual by using 'ZOOM IN'/'ZOOM OUT'.
- **Set type of data:** 'TYPE' to choose data among: Wind, Wave Data, Wheater, Humidity, Temperature, Visibility.
- **Set Date and Time:** 'DATE/TIME' to choose date and time among the pre-set one by the server.
- **Exit:** 'EXIT' to close the weather prediction page.

5.1.1.4 Real Time View

➤ **Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER'+ "REAL TIME VIEW" + 'ENTER'**

The following selections are available:

- **Real Time View On:** The data is shown (the area of the download) at the current date and time (received from the GPS)
- **Real Time View Off:** The weather data is not displayed.
  The layer displayed is the one selected into the previous menu item.

5.1.1.5 Type of Data

➤ **Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER'+ "TYPE OF DATA" + 'ENTER'**

Allows selecting the type of data among: Wind, Wave Data, Wheater, Humidity, Temperature, Visibility. See the previous Fig. 5.1.

5.2 AIS MENU

AIS is an Automatic Identification System. It has been introduced to improve the safety of navigation by assisting in the efficient operation of ship-to ship, ship reporting and VTS applications. The system should enable operators to obtain information from the ship automatically, requiring a minimum of involvement of ship's personnel, and should have a high level of availability. AIS transponders installed on IMO vessels use VHF frequencies to:

- Transmit details of their own vessel
- Receive details from other vessels or navigation aids within VHF range.

Information being transmitted from vessels over 300 tons that, due to recent worldwide legislation, are required to fit Class "A" AIS transponders.

Connecting to the chart plotter an AIS receiver (please contact your local dealer), vessels with AIS transponder within VHF range are displayed on screen giving the skipper or navigator a visual interpretation of the data of nearby vessels. This improves safety, and specifically for collision avoidance reasons.

5.2.1 AIS SYSTEM DEFINITIONS

Target = It is a vessel equipped with AIS. Information about the targets is being received by AIS Receiver and displayed on the screen.

CPA = Closest Point of Approach is the closest distance that will be achieved between your vessel and the tracked target, based on your vessel's speed and direction and the target's speed and direction.

CPA Limit = This is the distance from your vessel that a target may reach before a target is deemed a threat.

CPA Alarm = Occurs if CPA is less or equal to CPA Limit. This test is done for active targets only.

TCPA = Time to closest Point of Approach is the time remaining until the CPA will occur.

TCPA Limit = This is the time remaining before the CPA is reached.

TCPA Alarm = Occurs if TCPA is less or equal to TCPA Limit. This test is done for active targets only and if CPA value is less or equal to CPA Limit.

Radio Call Sign = International call sign assigned to vessel, often used on voice radio.

Name = Name of ship, 20 characters.

MMSI = Maritime Mobile Service Identity.

MMSI number = A unique 9 digit number that is assigned to a DSC radio station. It primarily registers the boat information in the U.S. Coast Guard's national distress database for use in emergency situations.

Active Target = Target located within the Activation Range. Active target is

represented by oriented triangle with COG and Heading vectors. Rate of turn may also be displayed.

Dangerous Target = Target detected by CPA or TCPA Alarm. Dangerous target is Active Target by definition. For better visibility Dangerous Target symbol is flashing.

Sleeping Target = Target located outside the Activation Range. Sleeping target is represented by a small oriented triangle.

Lost Target = When the AIS info is not received from that vessel for 3.5 minutes. The presentation will be a flashing black triangle with a cross through.

Activation Range = Range around your boat where targets become active. AIS target become active within this range. Activation Range should be greater than CPA Limit by definition.

Note

A target is removed from the screen if data is not received for 10 minutes.
The maximum number of tracked targets is 200.
Depending on the scale the presentation of the targets change to remove clutter on the screen.
This information is updated every 3 seconds to 6 minutes depending on speed and rate of turn, enabling the track of the vessels in range to be plotted.

TARGET STATUS	DESCRIPTION	SYMBOL
ACTIVE TARGET	Target located within the Activation Range.	
DANGEROUS TARGET	Target detected by CPA or TCPA Alarm. Dangerous Target is Active Target by definition.	Flashing
SLEEPING TARGET	Target located outside the Activation Range.	
LOST TARGET	Ais info is not received from that vessel for 3.5 minutes.	

Fig. 5.2.1 - AIS Symbols

5.2.2 AIS MENU

To configure the chart plotter to receive AIS data, follow the procedure:

➤ **Press any soft key + 'SETTING' + "DEVICES" + 'ENTER' + "AIS" + 'ENTER'**

The AIS menu is shown on the screen, the items are described in the following paragraphs.

5.1.2.1 Display

➤ **Press any soft key + 'SETTING' + "Devices" + 'ENTER' + "AIS" + 'ENTER'+ "Display" + 'ENTER'**

Turns Off the display of AIS targets overlay on the cartography or defines the range from the fix within which the AIS Target becomes active. The values allowed are from 0.1 to 20 Nm. The default setting is 5 Nm.

5.1.2.2 CPA Alarm

➤ **Press any soft key + 'SETTING' + "Devices" + 'ENTER' + "AIS" + 'ENTER' + "CPA Alarm" + 'ENTER'**

Turns Off the alarm or defines the CPA Limit (the values allowed are from 0.1 to 10 Nm). The default setting is Off.

5.1.2.3 TCPA Alarm

➤ **Press any soft key + 'SETTING' + "Devices" + 'ENTER' + "AIS" + 'ENTER' + "TCPA Alarm" + 'ENTER'**

Turns Off the alarm or defines the TCPA Limit (The values allowed are from 1 to 30 min). The default setting is Off.

5.2.3 TO SET THE PLOTTER FOR RECEIVING AIS

Make sure that the AIS receiver is properly connected to the chart plotter. The chart plotter reads the AIS NMEA message VMD, type 1, 2, 3 and 5.

Select the used serial port and transmission speed by following the procedure:

➤ **Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "Port 1/2/3 Input" + 'ENTER' + "m" + 'ENTER'**

Where: m = NMEA-0183 4800-N81-N or AIS 38400 according to the transmission speed of your AIS receiver.

5.2.4 QUICK INFO ON AIS TARGET

By placing the cursor over a AIS Target icon, this information is displayed:

- **Vessel Name**
- **MMSI number**
- **Radio Call Sign**
- **SOG**
- **COG**
- **CPA and TCPA values**

Note

The selected AIS Target icon is surrounded by a square frame when user places the cursor over the icon.

5.3 C-LINK

C-Link system is a feature which allows to sharing the same cartographic data between two chart plotter units linked via serial I/O port.

In order to activate C-Link function, a “MAX MAP C-CARD” (called REGULAR C-CARD) must be inserted into one of the two chart plotters and a special MAX MAP C-CARD (called MIRROR C-CARD) must be inserted on the other chart plotter.
The two MAX MAP C-CARD must have the same code and revision. So, the MIRROR C-CARD can be utilized only on a chart plotter linked to another chart plotter provided with the equivalent REGULAR C-CARD.

It is important to point out that the two chart plotters must have the update software versions that allow C-Link function.

5.3.1 HOW C-LINK SYSTEM WORKS

When the chart plotter is powered up, it switches into the “Stand-Alone Mode”. In this work mode, the chart plotter unit periodically scans all the available C-CARD slots searching for MIRROR C-CARD. When one or more MIRROR C-CARD is found (in one or both chart plotters) a special connection is established between the chart plotters to enable the MIRROR C-CARD. If a regular C-CARD which has previously activated a MIRROR C-CARD is removed, even the MIRRORs C-CARD will be not read anymore on the other unit.

5.3.2 C-LINK SERIAL CONNECTION

The two chart plotters should be connected via serial ports. Any of the available ports can be used, the software will recognize automatically the serial ports used. A typical connection is as follows:

Chart Plotter 1		Chart Plotter 2
TX	————————>	RX
RX	<————————	TX
GND	<————————>	GND

5.3.3 C-LINK NAVIGATION DATA TRANSFER

This function allows transferring C-Link Navigation Data (Route Name, Destination ID & Position, Next Waypoint ID & Position, Total Route length, Fuel Consumption Rate, ETA, TTG etc.) between two chart plotters linked through the C-Link system.
The chart plotters can be set to operate in two modes:

- MASTER mode (Primary Chart Plotter)
- SLAVE mode (Secondary Chart Plotter)

When the navigation is activated on the Master chart plotter, the C-Link navigation data will be continuously sent to the Slave until the navigation is active.
If the Master is navigating to a Single Destination, the Slave will show the Destination position and activate the navigation to it.
If the Master is navigating to a Route, the Slave will show the Route Leg composed by the Destination and the Waypoint after the Destination (Next Waypoint) and activate the navigation to it.
Any variation to the current C-Link Navigation Data will be transferred from the Master to the Slave.
The Slave will be provided with a few dedicated pages to show the C-Link Navigation Data received from the Master.

5.3.4 OPERATIONS

It is important remark, once more, that this function does not transfer the whole route but just the information relative to the navigation. Such information will be removed from the Slave chart plotter as soon as the navigation is terminated. C-Link Navigation Data is exchanged by using two NMEA-0183 C-MAP proprietary sentences: $PCMPN,1 and $PCMPN,2.

When the navigation is activated on the Master, it starts outputting the C-Link Navigation Data. If the Slave is connected, all C-Link Navigation Data received are stored in its memory and the navigation is started.

The information sent by the Master consists of the following values:

- Navigation mode (To Single Destination/to a Route)
- Route Name*
- Destination ID
- Destination Position
- Next Waypoint ID*
- Range from Destination to next Waypoint*
- Bearing from Destination to next Waypoint*
- Route Length*
- Distance from Destination to Last Route Waypoint*
- Remaining Route Legs*
- Planned Cruising Speed
- Average Fuel Consumption
- Initial Fuel Load

C-Link Navigation Data can refer to:

- Single Destination navigation
- Route Following navigation

Values identified by * are sent only for Route Following navigation.

The Destination Icon, Navigation leg (Fix Position to Destination), the Next Waypoint Icon and all other relevant C-Link Navigation Data will be shown on the Slave chart plotter. Any variation of the C-Link Navigation Data on the Master will be communicated to the Slave so to keep data aligned on both devices.

5.3.4.1 Master Chart Plotter

Operating mode

To select the Master mode (Primary Station) follow the procedure:

➤ **Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Primary Station" + 'ENTER'**

Master mode is the default factory setting. All regular chart plotters functions are allowed. As soon as the Destination is placed, the Master chart plotter will start transmitting all C-Link Navigation Data.
In Master mode the C-Link Navigation Data received from the NMEA port is ignored. So, if the two chart plotters are both operating in Master mode, the C-Link Navigation Data sent by the other chart plotter never processed.
Under such condition if the navigation is activated on one of the two chart plotters, a warning message will be shown to notify that the C-Link Navigation Data will be ignored by the other chart plotter.

5.3.4.2 Slave Chart Plotter

Operating mode

To select the Slave mode (Secondary Station) follow the procedure:

➤ **Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER' + "Secondary Station" + 'ENTER'**

When Slave mode is set, the chart plotter cannot manipulate the C-Link Navigation Data anymore.

Stop current navigation

If the navigation was already active, it will be disabled as soon as Slave mode is set. An appropriate warning message will be shown to notify that the Navigation is already active and to confirm whether Slave mode can be set.

Inhibit Navigation operation

As soon as Slave mode is set, the destination cannot be placed anymore either the C-Link Navigation Data is received from the Master or not. Also, when the C-Link Navigation Data is received from the Master, it will not be allowed to deactivate the Navigation.

Inhibit Route following

While navigating to the route received from the Master the destination is reached (either applying distance or perpendicular criteria), the destination will not be moved to the next Waypoint on the route.

MOB handling

If the Navigation to the external destination is active and 'ENTER' + "MOB" + 'ENTER' is pressed on the Slave Chart Plotter, the MOB is placed but the navigation to the MOB is not activated.

Notes

While navigating to the external destination the Operating Mode is switched to Master mode, the navigation to the external destination will be terminated. An appropriate warning message will be shown to notify that the Navigation to the external destination is active and to confirm whether Slave mode can be set. Setting Slave mode, the C-Link Navigation Data will be deleted. The C-Link Navigation Data are deleted at Power Off.

5.3.4.3 C-Link navigation data: Acquisition and Display

As soon as the C-Link Navigation Data is received, the Slave parses the information received and executes the relative actions depending on its current working status.

Note

When the Navigation to the external Destination is activated, the Slave chart plotter will show all relevant C-link Navigation Data exactly like when the destination is not the external one: (Destination Name, DST and BRG to Destination, calculate XTE, calculate TTG etc). These values will be displayed all places where required and they will be used to format NMEA-0183 output data.

DESCRIPTION	SYMBOL
External Destination - RED Icon	D WPT002
Next Waypoint - GREEN Icon	N WPT003
Navigation Leg - RED Line	

Fig. 5.3.4.3 - Graphical Displaying

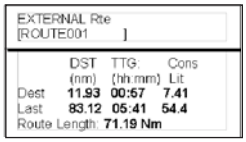
5.3.4.4 Route Data Report

When the Navigation to the External Route is received, it will be possible to display the information related to the External Route by entering the Route Data Report.

External Route : Name of the External Route (from PCMPN,0)
Cruising Speed : Planned Cruising Speed (from PCMPN,1)
Fuel Consumption Rate : Planned Fuel Consumption Rate (from PCMPN,1)
Total Route length Route : Length from First to Last Wpt. (from PCMPN,1)
Initial Fuel Load : Volume of Fuel available before the navigation was started *(Liters)*
Total Fuel Consumption : Calculated Fuel consumption to navigate the whole route.
Waypoints in Route : No. of Wpts in the Route (from PCMPN,1)
Remaining Waypoints : No. of Wpts from Dest to Last Wpt (from PCMPN,1)
Distance to Destination : Distance from Ship to Destination (Calculated)
Distance to Next Wpt : Distance to travel from ship to the Wpt after the Destination (calculated: Distance to Dest + Next Route Leg length)
Distance to Last Wpt : Distance to travel from ship to the End of the Route (Calculated: Distance to Dest +Distance From Dest to last Wpt received from PCMPN,1)
TTG To Destination : Estimated Time to travel the "*Distance to Last Wpt*". Calculated using Cruising Speed.
TTG To Next Wpt : Estimated Time to travel the "*Distance to Next Waypoint*" Calculated using Cruising Speed.
TTG to Last Wpt : Estimated Time to travel the "*Distance to Last Wpt*". Calculated using Cruising Speed
ETA to Destination : Estimate Time of Arrival to the Destination Point. Calculated: Current Time + "*TTG To Destination"*
ETA to Next Waypoint : Estimate Time of Arrival to the Waypoint after the Destination. Calculated: Current Time + "*TTG To Next Waypoint"*
ETA to Last Wpt : Estimate Time of Arrival to the End of the Route. Calculated: Current Time + "*TTG To Last Wpt"*

5.3.4.5 Quick Info

Route Navigation: Quick Info on the Destination



Route Name, DESTINATION ID Wpt1/4

Distance, TTG and Consumption from Ship to Dest
Distance, TTG and Consumption from Ship to Last Wpt

Fig. 5.3.4.5 - Quick Info on Destination

Quick info on Single Destination

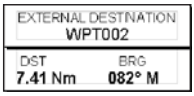


Fig. 5.3.4.5a - Quick Info on Single Destination

5.4 FISH FINDER MENU

The chart plotter combined with the sonar performance of the Fish Finder is one of the most advanced marine navigation system available. To select the Fish Finder menu, first select one of the page related to the Fish Finder:

➤ **'PAGE' + "Fish Finder " + 'ENTER' + 'CLEAR'**

Then to select the Fish Finder menu:

➤ **Press any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER'**

For more information see the specific Fish Finder User Manual.

Note

The Fish Finder display page is available only if the Fish Finder is connected and powered On.

6. Fish Finder FOR SOUNDER COMBO

The Fish Finder consists of a high power transmitter, sensitive receiver and a transducer. The Fish Finder sends an electrical pulse to the transducer which contains an element that converts the pulse into acoustic (sound) wave which is sent through the water. As this wave travels from the transducer to the bottom, it may strike fish, structures, thermal clines (temperature changes in the water). When the wave strikes an object(s) a certain amount of the wave is reflected back to the transducer depending on the composition and shape of the object. When the reflected wave is returned to the transducer it is converted into an voltage and is amplified by the receiver, processed and sent to the display. The speed of sound in water is roughly 4800 ft./sec, so the time lapse between the transmitted signal and the received echo can be measured and the distance to the object determined.

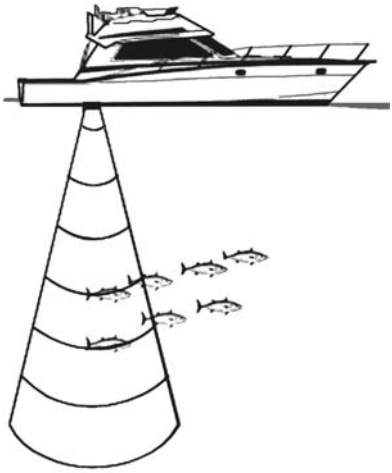


Fig. 6 - Fish Finder working principle

6.1 SETTING THE INTERNAL FISH FINDER ON

The Fish Finder driver is embedded on the chart plotter: it is connected directly to the dedicated serial Port2. To switch the internal Fish Finder transmission On follow the procedure:

➢ **Press any soft key + 'SETTING' + "Input/Output" + 'ENTER' + "Fish Finder" + 'ENTER' + "On" + 'ENTER'**

Note

It is not possible to connect any external Fish Finder unit to the chart plotter.

6.2 UNDERSTANDING THE FISH FINDER PAGE

The display on chart plotters shows a history of time of the echoes received by the transducer. The chart plotters have a menu that allows adjustments to receiver sensitivity, depth range and scrolling speed of the Fish Finder display.

1. Warning message
2. Echogram window
3. Color Bar
4. Digital Depth
5. Water temperature
6. Alarm Bar
7. Depth ruler
8. Variable Depth Marker (VDM)
9. Zoom Bar
10. A-Scope
11. Operating Frequency

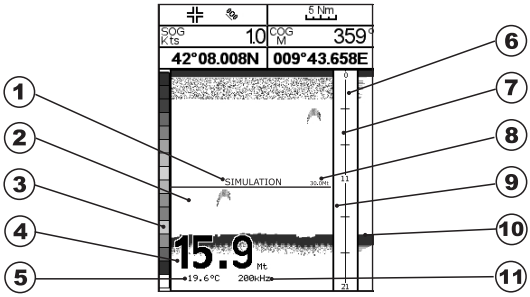


Fig. 6.2 - The Fish Finder page

The following is a short description of terms listed in the previous Fig. 6.2:

1 Warning Message
Flashing label "Simulation" when the echo sounder is in Simulation mode.

2 Echogram window
Graphic presentation of sonar soundings recorded as a continuous profile scrolling across the screen from right to left. Such recordings represent the image of the water beneath your boat, items appear as they pass under your transducer; the items on the right side of the screen are closer to you than those on the left. The correct interpretation of the Echogram allows retrieving useful information about what is under the boat. See the following Par. 6.2.1 for more information.

3 Color Bar
Colored scale located on the left side of the screen that shows the colors used in the Echogram to represent the echoes strength. The color on the top of the bar represents the maximum sonar strength, while the color on the bottom of the bar represents the minimum sonar strength.

4 Digital Depth
Readout of the current bottom depth.

5 Water Temperature
Readout of the current water temperature returned by the TEMP 1 sensor included into specific transducers.

6 Alarm Bar
Bars showing the shallow water and deep water alarm values. The alarm is triggered when depth is outside the range.

⑦ **Depth ruler**
Vertical graduated bar. It is a scale which reflects the depth of the area being displayed.

⑧ **Variable Depth Marker (VDM)**
Horizontal line on to the Echogram window with a depth label. The up/down cursor keys can move it up and down. The label displays the depth of the cursor position. It can be moved to any location pinpointing the depth of a target.

⑨ **Zoom Bar**
Bar showing the portion of the Echogram currently represented in the zoomed window (on the left part of the screen). It is turned on selecting Zoom Full display page.

⑩ **A-Scope**
A real time representation of fish and bottom features passing through the beam of the transducer. It is drawn as horizontal lines whose length and hue is proportional to the sonar strength returned. When the default palette is selected, the strongest sonar returns will be shown as the color displayed of the top of Color Bar while the weakest as the bottom color.

⑪ **Operating Frequency**
Readout of the selected operating frequency.

6.6.2 UNDERSTANDING THE ECHOGRAM DISPLAY

The main elements that can be easily distinguished into an Echogram are:

① Fishes
② Thermoclines
③ White Line
④ Surface Clutter
⑤ Structures
⑥ Bottom Echo Profile

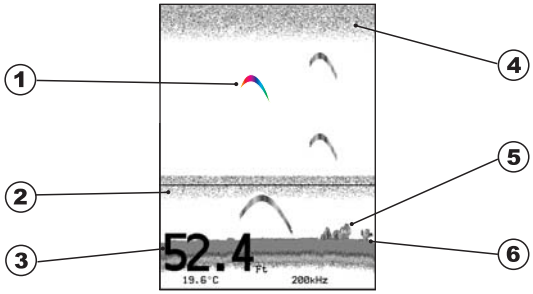


Fig. 6.6.2 - The Fish Finder Echogram

① **Fishes**
Fishes are represented as arcs because of the cone angle of the transducer. In fact as the boat passes over the fish the leading edge of the cone strikes the fish, causing a display pixel to be turned on. As the boat passes over the fish, the distance to the fish decreases turning each pixel on at a shallower depth on the display. When the boat is directly over the fish, the first half of the arch is formed and since the fish is closer to the boat, the signal is stronger and the arch is thicker. As the boat moves away from the fish, the distance increases and the pixels appear at progressively deeper depths forming the remaining half of the arch.

② **Thermoclines**
Are the zones where two layers of different water temperatures meet. The greater the temperature differential, the thicker the thermocline is shown on the screen. Thermoclines are represented as horizontal stripes of noise. They are very important for fishing since often many species of game fish like to suspend in, just above, or just below the thermoclines.

③ **White Line**
The White Line shows the difference between hard, soft bottoms and even distinguishes between fishes and structures located near the bottom. In this way it is easier to tell the difference between a hard and soft bottom and even to distinguish fishes and structures located nearby the bottom. For example, a soft, muddy or weedy bottom returns a weaker echo that is shown with a narrow white line while a hard bottom returns a strong echo that causes a wide white bottom line.

④ **Surface Clutter**
Appears like noise at the top of the screen extending many feet below the surface. It's caused by many things, including air bubbles, bait fish, plankton and algae.

⑤ **Structures**
Generally, the term "structure" is used to identify objects like wrecks and weeds rising from the bottom.

⑥ **Bottom Echo Profile**
Bottom profile recorded by the Fish Finder. When the echo sounder is set in auto-range mode it is automatically kept in the lower half of the screen.

Other Elements
Large anchoring cables are returned by the echo sounder as very long and narrow arcs on the screen.

6.3 DISPLAYING THE FISH FINDER PAGE

This section will take you through the frequently used operations and assist you to customize the look of the chart plotter using the Fish Finder.

6.3.1 HOW TO SELECT THE FISH FINDER PAGE

The Page Selection menu allows you to change the Fish Finder page displayed. To access this menu:

➤ **'PAGE'**

The Page selection menu (with current page selected) is shown on the screen. For example, if the Fish Finder Full 200kHz page is on the screen, in the Page selection menu the selected item is **Fish Finder**. Moving cursor up/down selects the previous/next item, and then press**'ENTER'** to select.

Also it is possible to select two pages at the same time (for example **Fish Finder 200kHz** and **Fish Finder 50kHz,** or **Fish Finder 200kHz** and **Chart**. See the following paragraphs).

6.3.1.1 Fish Finder Full page

To display the Fish Finder Full Page Echogram, follow this procedure:

➤ **'PAGE' + "Fish Finder" + 'ENTER'**

then moving cursor up/down selects the desired Frequency among Auto, 50kHz or 200kHz, and then press**'ENTER'**.

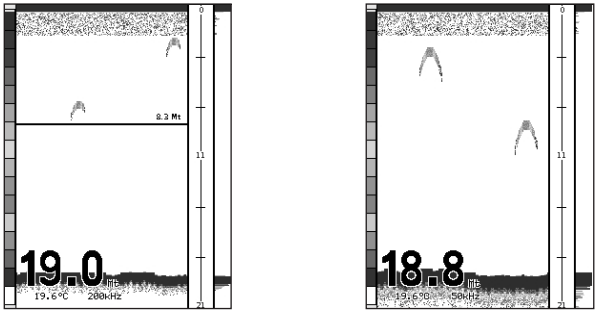


Fig. 6.3.1.1 - Example of 200kHz (left) or 50 kHz (right) Fish Finder Full display

The Soft Key

To activate the Fish Findr Setup menu (see Par. 6.5) press:

➤ **Any Soft Key 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" 'ENTER'**

The Cursor key

Moving the Cursor key up/down adjusts the Variable Depth Marker (VDM) up or down on the screen.

The ENTER key

Pressing **'ENTER'** activates the Sensitivity menu (see Par. 6.5.9) that allows tuning the Gain, the Surface Noise Filter and the STC.

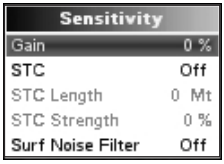


Fig. 6.3.3.1 - Sensitivity sub-menu

Pressing **'CLEAR'** turns off the Sensitivity menu.

The CLEAR key

By pressing **'CLEAR'** the Variable Depth Marker (VDM) is hidden.

The ZOOM IN and ZOOM OUT keys

From this page pressing **'ZOOM IN'** once changes to Zoom 2X, pressing **'ZOOM IN'** twice changes to Zoom 4X, while pressing **'ZOOM OUT'** reverts to Zoom 2X and no zoom.

6.3.1.2 Fish Finder Full + Databoxes page

It is possible to have the same picture of the previous Par. 6.3.1.1 with the Databoxes on the top of the screen:

➤ **'PAGE' + "Fish + Databoxes" + 'ENTER'**

then moving cursor up/down selects the desired Frequency among Auto, 50kHz or 200kHz, and then press**'ENTER'**.

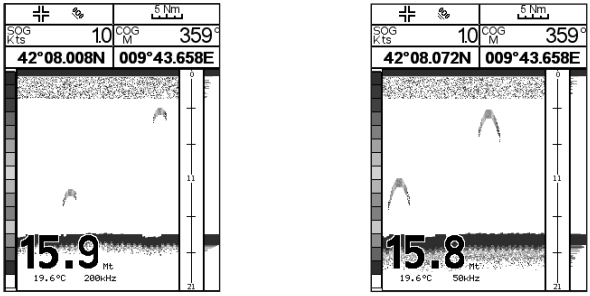


Fig. 6.3.1.2 - Example of Fish Finder with Databoxes page

6.3.1.3 Dual Fish Finder page

To display the Dual Fish Finder echogram, follow this procedure:

➤ **'PAGE' + "Dual Fish Finder" + 'ENTER'**

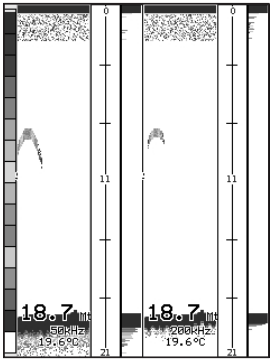


Fig. 6.3.1.3 - Example of Dual Fish Finder page

Note

The yellow box surrounds the area of the screen that it is active.

The Cursor key

Moving the Cursor key to the right or the left to change the yellow box from the left window to the right window. Moving the Cursor key up or down adjusts the Variable Depth Marker (VDM) up or down on the active screen window. Press **'CLEAR'** to hide the VDM.

The ZOOM IN and ZOOM OUT keys

From this page pressing **'ZOOM IN'** once changes to Zoom 2X, pressing **'ZOOM IN'** twice changes to Zoom 4X, while pressing **'ZOOM OUT'** reverts to Zoom 2X and no zoom.

6.3.1.4 Fish Finder and Chart page

To display the Chart page on the half of the screen and the Fish Finder Echogram on the other half of the screen, follow this procedure:

➤ **'PAGE' + "Chart + Fish Finder" + 'ENTER'**

then moving cursor up/down selects the desired Frequency among Auto, 50kHz or 200kHz, and then press**'ENTER'**.

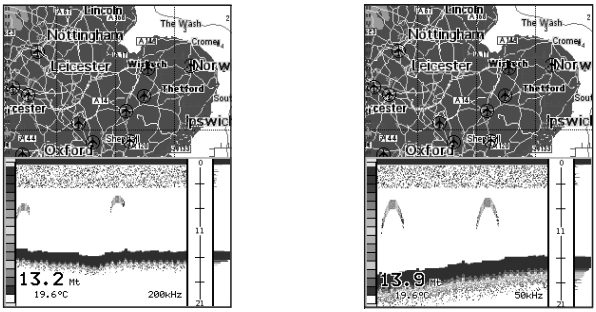


Fig. 6.3.1.4 - Example of Fish Finder 200kHz (left) and 50kHz (right) and Chart page

The Focus Soft Key (to change the active window)
When in Chart and Fish Finder mode pressing any Soft Keys and then **'Focus'** changes the focus (the active window), yellow box, from the Chart window to the Fish Finder window and vice versa.

Note
When the focus is on the Chart, all keys behave as in standard chart mode.

6.4 ZOOM MODES

6.4.1 THE BOTTOM LOCK ZOOM

The Bottom Lock Zoom mode is activated when the Fish Finder is in Auto Range or Bottom Lock mode (see Par. 6.5.3) and the Variable Depth Marker (VDM) is not displayed on the screen.

In Bottom Lock Zoom mode the Fish Finder Echogram is automatically moved up/down as to keep the Bottom Line always visible in the lower half of the screen.

Note
Moving the Cursor key up/down displays the Variable Depth Marker (VDM) switching the Fish Finder in Marker Zoom mode.

6.4.2 THE MARKER ZOOM

The Marker Zoom mode is activated either when the Fish Finder is in Manual Range mode (see Par. 6.5.3) or the Depth Cursor is displayed on the screen.
In Marker Zoom mode the Fish Finder Echogram position is controlled by moving the Variable Depth Marker (VDM) and pressing and holding **'ENTER'** for 1 second on the selected position. Moving the Variable Depth Marker (VDM) over the top or below the bottom of the screen, automatically moves up/down the current zoomed Echogram view and re-position the Variable Depth Marker (VDM) at the center of the screen.

Note
*Pressing **'CLEAR'** hides the Depth Cursor and if the Fish Finder is in Auto Range or Bottom Lock mode switches into Bottom Lock Zoom mode.*

6.5 FISH FINDER SETUP MENU

The Fish Finder Setup menu provides access to additional functions, setup and layout/data field options. From the Fish Finder page, access this menu by pressing:

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER'**

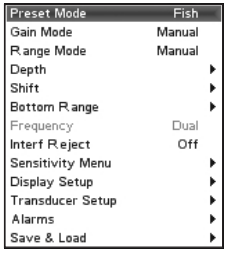


Fig. 6.5 - Fish Finder Setup menu

6.5.1 PRESET MODE

Preset modes are pre-defined settings of the Fish Finder operating parameters. You can use them to quickly set the Fish Finder in the most commonly used operating modes. These are Cruise (sets the Fish Finder in full auto mode with the sensitivity settings optimized for displaying at best the bottom) and Fish (sets the Fish Finder in full auto mode with the sensitivity setting optimized for target searching). See the following table.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Preset Mode" + 'ENTER'**

Fish	:	Gain Mode = Auto, Range Mode = Auto, Frequency = do not change, Shift = 0, STC = Short if Freq=200kHz and Mid if Freq=50kHz, Scrolling Speed = 10, Fish Symbols = Echo, A-Scope = On, Surface Noise Filter = Off.
Cruise	:	Gain Mode = Auto, Range Mode = Auto, Frequency = do not change, Shift = 0, STC = Short if Freq=200kHz and Mid if Freq=50kHz, Scrolling Speed = 10, Fish Symbols = Echo, A-Scope = On., Surface Noise Filter = 4.

6.5.2 GAIN MODE

Selects Auto or Manual.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Gain Mode" + 'ENTER'**

6.5.3 RANGE MODE

Selects among Manual, Auto Range and Bottom Lock. When in **Manual Range Mode** it is possible to set Shift (the offset from the surface) (see Par. 6.5.5) and Depth (see Par. 6.5.4) on which the Fish Finder shall operate. When in **Auto Range Mode** the Fish Finder determines automatically the range as to keep the bottom visible in the lower left of the screen. In this mode, Shift is always set to 0. In **Bottom Lock Mode** the Fish Finder automatically tracks the range around the bottom specified by the Bottom Range value.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Range Mode" + 'ENTER'**

6.5.4 DEPTH

This option is available only when Range Mode is Manual and it is disabled in Auto Range and Bottom Lock Mode.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Depth" + 'ENTER'**

6.5.5 SHIFT

This option is available only when Range Mode is Manual and it is disabled in Auto Range and Bottom Lock Mode.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Shift" + 'ENTER'**

6.5.6 BOTTOM RANGE

This option is available when Range Mode is Bottom Lock.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Bottom Range" + 'ENTER'**

6.5.7 FREQUENCY

Allows you to choose the frequency between Auto, 50 kHz or 200 kHz when single frequency page is selected.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Frequency" + 'ENTER'**

6.5.8 INTERFERENCE REJECTION

Selects a filter to remove interference from other Fish Finders.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Interf Reject" + 'ENTER'**

6.5.9 SENSITIVITY MENU

The Sensitivity menu is accessible both from the Fish Finder Setup menu and by pressing **'ENTER'** when in Fish Finder pages. All settings in the Sensitivity menu are related to the Frequency selected.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Sensitivity Menu" + 'ENTER'**

6.5.9.1 Frequency

This option is available only in the Dual Frequency page. It allows you to select the Frequency to which the Sensitivity parameters are applied.

6.5.9.2 Gain

Allows you to control the Gain of the unit's receiver. To see more details on the screen, increase the receiver sensitivity by selecting a higher gain percentage. If there is too much detail or if the screen is cluttered, lowering the sensitivity may increase the clarity of the display.

6.5.9.3 STC

Sensitivity Time Constant: it is a time varying gain curve which attenuates the sonar receiver gain in shallow water, increasing the gain gradually as the depth increases. This is for the purpose of filtering out surface clutter.

6.5.9.4 STC Length

If STC is Custom, it is possible to change the Length of the Sensitivity Time Constant.

6.5.9.5 STC Strength

If STC is Custom, it is possible to change the Strength of the Sensitivity Time Constant.

6.5.9.6 Surface Noise Filter

This function implements an advanced time varying filter that allows suppressing the surface clutter efficiently while leaving fish targets visible.

Note

Thus imposing the capability of the Fish Finder to correctly detect the weakest echoes coming from a very deep bottom.

6.5.10 DISPLAY SETUP

The Display Setup Menu allows you to change the color scheme of the Fish Finder display, adjusts the chart scrolling rate, enables or disables the White Line and allows determining the graphical representation of fishes.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Display Setup" + 'ENTER'**

6.5.10.1 Color Settings

Allows you to change the color scheme of the Fish Finder display. The available colors are Blue Background, White Background, Black Background, Gray Scale and Reversed Gray Scale.

6.5.10.2 Scrolling Speed

Adjusts the chart scrolling rate. Note that the scrolling rate is limited by the sound speed and the depth according with the following relation: the deeper the setting, the slower the scrolling rate. 100% is the maximum possible.

6.5.10.3 White Line

Controls how the chart plotter displays information about the bottom type (hard or soft).

6.5.10.4 Fish Symbols

This selection allows determining the graphical representation of underwater suspended targets. See the following table.

Echo	:	shows echoes
Echo + Icon	:	shows the Fish icon and echoes
Echo + Icon + Depth	:	shows the Fish icon, depth values and the fish echoes
Echo + Depth	:	shows depth values
Icon	:	shows Fish icons
Icon + Depth	:	shows Fish icons and their depth (accordingly to currently selected depth unit)

The Fish icons displayed are among four different shapes depending on the size of the Target (Small, Med, Big, Huge).

6.5.10.5 Water Temperature

Allows you to choose the Water Temperature label displayed over the echogram between Primary and External.

6.5.11 TRANSDUCER SETUP

Selects the Transducer Setup menu that contains the settings that should not require frequent change.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Transducer Setup" + 'ENTER'**

6.5.11.1 Keel Offset

It is the transducer depth offset from the surface. This makes it possible to measure depth from the surface instead of from the trasducer's location.

6.5.11.2 Calibrate Sound Speed

Allows calibrating the value of Sound Speed in the water, depending on the water temperature and salinity.

6.5.11.3 Calibrate Water Speed

Allows calibrating the value of Water Speed sensor. The calibration value, in the range between -10% to +10%, will be applied to the water speed from the transducer.

6.5.11.4 Calibrate Water Temperature

Allows the calibration on the Water Temperature sensor. Using the readings from a precise temperature measuring device, insert here a positive/negative offset to display right value on Fish Finder screens.

6.5.11.5 Calibrate Aux Temperature

Allows the calibration of the Aux Temperature sensor. Using the readings from a precise temperature measuring device, insert here a positive/negative offset to display right value on FF screens.

6.5.11.6 Set Default Settings

Restores the default values.

6.5.12 ALARMS

The Alarms menu allows you to define additional sonar alarm settings for Fish Alarm, Shallow Alarm, Depth Alarm and Temperature Upper/Lower/Rate.

➤ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Alarms" + 'ENTER'**

6.5.12.1 Shallow Water

Triggers an alarm when depth becomes shallower than the value set.

6.5.12.2 Deep Water

Triggers an alarm when depth becomes deeper than the value set.

6.5.12.3 High Water Temperature

Triggers an alarm when the transducer reports a temperature (from TEMP 1 sensor) above the value set.

6.5.12.4 Low Water Temperature

Triggers an alarm when the transducer reports a temperature (from TEMP 1 sensor) below the value set.

6.5.12.5 Water Temperature Rate

Triggers an alarm when the transducer reports a temperature (from TEMP 1 sensor) variation rate above the value set.

6.5.12.6 Fish Alarm

The options for Fish Alarm set the size of the fishes that, if detected by the unit, switches an alarm to sound. These options are: Off, Small, Medium, Big and Huge. The alarm sounds if the set size (or bigger) is detected.

6.5.13 SAVE & LOAD

Insert the User C-CARD into the slot, then follow the procedure:

➢ **Any soft key + 'SETTING' + "Devices" + 'ENTER' + "Fish Finder Setup" + 'ENTER' + "Save & Load" + 'ENTER'**

6.5.13.1 Load Settings from User C-CARD

Load the complete settings from the User C-CARD and changes the active menu settings.

6.5.13.2 Save Settings to User C-CARD

This is useful to avoid the user havin to retune up Fish Finder after a Clear RAM operation or a software update.

6.5.13.3 Restore Current Preset Defaults

Restors the default values only for the current presets (see Par. 6.5.1, Preset Mode) and does not affect the other presets.

6.6 TRANSDUCERS

The transducer is a device that transmits and receives sound waves into the water. The active component inside the transducer is commonly referred to as an element but actually is a piezoelectric ceramic material.

Please refer to installing instructions of the transducer manufacturer.

Note

In the following tables, related to the transducer functions in the "Funct." column, these abbreviations are used: D = Depth, S = Speed and T = Temperature.

6.6.1 DEDICATED AVAILABLE TRANSDUCERS

	AIRMAR #	Model Designation	Housing	Mount	Funct.	Power
P58	31-492-1-01	P58 Low cost Transom Mount	Plastic	Transom	D/S/T	600W
P66	31-680-1-01	P66 Hi Performance	Plastic	Transom	D/S/T	600W
P79	31-494-2-01	P79 Plastic	Plastic	In-hull	D	600W
P319	31-495-2-01	P319 Plastic	Plastic	Thru-hull	D	600W
B744V	31-658-2-02	B744V W/ Hi Performance Fairing	Bronze	Thru-hull	D/S/T	600W
B45	31-696-1-01	B45 W/ Hi Performance Fairing	Bronze	Thru-hull	D/T	600W

7. Terms & Functions

This section explains the terms that may be unfamiliar to the reader. The symbol ■ indicates that the term is followed only by an explanation, while the symbol ➤ indicates that the term is more widely explained; you will also find a briefly description on how to select the related menu option, listing the operation a keys sequence with the menu names enclosed between double apices. For example 'ENTER' + "Waypoint" + 'ENTER' means that you must press the 'ENTER' key, using the cursor key to select the Waypoint item and press the 'ENTER' key to place it.

➤ **AIS (menu)**
Automatic Identification System. It has been introduced to improve the safety of navigation by assisting in the efficient operation of ship-to ship, ship reporting and VTS applications.

... Display
Press any soft key + 'SETTING' + "DEVICES" + 'ENTER' + "AIS" + 'ENTER' + "DISPLAY" + 'ENTER'
... CPA Alarm
Press any soft key + 'SETTING' + "DEVICES" + 'ENTER' + "AIS " + 'ENTER' + "CPA ALARM" + 'ENTER'
... TCPA Alarm
Press any soft key + 'SETTING' + "DEVICES" + 'ENTER' + "AIS" + 'ENTER' + "TCPA ALARM" + 'ENTER'

➤ **ALARMS (menu)**
Sets the desired values/settings for the alarms.

... Auto Off *(On, Off)*
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "AUTO OFF" + 'ENTER'
... Arrival Alarm
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "ARRIVAL ALARM" + 'ENTER'
... XTE Alarm
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "XTE ALARM" + 'ENTER'
... Anchor Alarm
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "ANCHOR ALARM" + 'ENTER'
... Depth Alarm
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "DEPTH ALARM" + 'ENTER'
... HDOP Alarm
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "HDOP ALARM" + 'ENTER'
... Heading Alarm *(On, Off)*
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "HEADING ALARM" + 'ENTER'
... Grounding Alarm
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "GROUNDING ALARM" + 'ENTER'
... Grounding Alarm Range *(0.25 Nm, 0.5 Nm, 1.0 Nm)*
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "GROUNDING ALARM RANGE" + 'ENTER'
... Grounding Alarm Report
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "GROUNDING ALARM REPORT" + 'ENTER'
... External Alarm *(On, Off)*
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER' + "EXTERNAL ALARM" + 'ENTER'

➤ **AUTO INFO**
The type of Automatic Info is user selectable. The possible settings are: **Off**: disabled, no automatic info shown at all; **On Points**: only on points. This is the default setting. **On All**: on all objects (points, lines and areas).
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "AUTO INFO" + 'ENTER'

■ **AZIMUTH**
Angular measurement from the horizon to a satellite or another object.

■ **BEACON**
Prominent, specially constructed object forming a conspicuous vertical mark as a fixed aid to navigation.

■ **BRG = Bearing**
Angle between the North (True or Magnetic) and a destination. It represents the direction to follow.

■ BUOY
Floating object moored to the sea bottom in a particular (charted) place, as an aid to navigation.

➤ CARTRIDGE (menu)
Before a new User C-CARD can be used, you must format it. The formatting function initializes the User C-CARD and prepares it for storing information. Remember that if an User C-CARD is not blank, formatting it will destroy any data already present on the User C-CARD (the User C-CARDs must be formatted in order to be reused, this operation means all old data memorized on the User C-CARD will be lost).

... Read
Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + CARTR.' + 'READ'

... Format
Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'CARTR.' + 'FORMAT'

... Sort By
Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'CARTR.' + 'SORT BY'

■ C-CARD
Chart cartridge that contains detailed charts of the area covered.

➤ CHART (page)
Shows the chart and the Text Area (if selected).
'PAGE' + "CHART" + 'ENTER'

■ C-LINK
Allows to sharing the same cartographic data between two chart plotters linked via serial I/O port.

■ COG = Course Over Ground
Direction of the path over ground actually followed by a vessel.

➤ CONFIG Track (menu)
Handles track settings.

... Active Track
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "ACTIVE TRACK" + 'ENTER'

... Display Mode *(Visible/Hidden)*
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "DISPLAY MODE" + 'ENTER'

... Color
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "COLOR" + 'ENTER'

... Step Unit *(Time/Distance)*
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "STEP UNIT" + 'ENTER'

... Time Step *(1 sec, 5 sec, 10 sec, 30 sec, 1 Min, 5 Min, 10 Min)*
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "TIME STEP" + 'ENTER'

... Distance Step *(0.01, 0.05, 0.1, 0.5, 1.0, 2.0, 5.0, 10.0)*
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "DISTANCE STEP" + 'ENTER'

... Delete All Tracks
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER' + "DELETE ALL TRACKS" + 'ENTER'

■ CURRENT
Non-periodical movement of sea-water, generally horizontal, due to many causes such as different temperatures and prevalent winds. Some may be temporary, others permanent.

➤ C-WEATHER
Meteorological forecasting system with the ability to visualize the weather forecast, overlaying it on cartography.

... Load From File
Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER' + "LOAD FROM FILE" + 'ENTER'

... Download *(Select Country To Call, Telephone Number, Pin Sim, Download Area)*
Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER' + "DOWNLOAD" + 'ENTER'

... Forecast
Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER' + "FORECAST" + 'ENTER'

... Real Time View *(On, Off)*
Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER' + "REAL TIME VIEW" + 'ENTER'

... Type of Data *(Wind, Wave Data, Weather, Humidity, Temperature, Visibility)*
Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER' + "TYPE OF DATA" + 'ENTER'

➤ DATA (page)
Allows to select the number of lines (max 4) and the values that are shown in the Text Area.
'DATA'

■ DATUM
The Latitude and Longitude lines printed on any map are based on certain models of the shape of the earth: these models are called Datum or Coordinate Systems. There are many different Datum in use, each one gives different Lat/Lon positions for an identical point on the surface of the earth.

■ Dedicated Key
Key with a specified function. These keys have a label printed on them.

■ DEFAULT
Indicates a value or a setting which is used if the user has not defined a particular value. You can modify this value using the menu settings.

➤ DEPTH (pages)
Allows to display the Depth Graph (if Fish Finder pages are not available and if valid NMEA0183 depth data is available):
full screen: **'PAGE' + "Full Depth" + 'ENTER'**
split screen+chart: **'PAGE' + "Chart+Depth" + 'ENTER'**
split screen+data boxes: **'PAGE' + "Depth+Data boxes" + 'ENTER'**

■ DEPTH RANGE
The sea area that is **beyond** the selected range is filled by an uniform white color, the sea area that is **inside** the selected range is filled by ordinary multicolor shading. The Spot Soundings and Depth Contours are displayed on the range only.

➤ DEVICES (menu)
Allows to select the following menu:

... FISH FINDER SETUP Menu
Press any soft key + 'SETTING' + "DEVICES" + 'ENTER' + "FISH FINDER SETUP" + 'ENTER'

... AIS Menu
Press any soft key + 'SETTING' + "DEVICES" + 'ENTER' + "AIS" + 'ENTER'

■ DGPS = Differential GPS
Provides even greater positioning accuracy than standard GPS.

■ DTG = Distance To Go
Actual distance to reach the Target.

■ EVENT
User point that refers to the ship's position. It is simply a way of marking where the boat is.

■ FILE
Collection of information (of the same type) stored on a User C-CARD. Each file must have a unique name, ideally one that describes its contents. Filenames are kept in a directory on each User C-CARD.

➤ FIND (menu)
Allows finding Port Services, Port By Name, Port By Distance, Lakes By Name, Lakes Information, Points Of Interest, Tide Stations, Wrecks, Obstructions, Cursor, Coordinates and User Points.

... Port Services
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "PORT SERVICES" + 'ENTER'

... Port By Name
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "PORT BY NAME" + 'ENTER'

... Port By Distance
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "PORT BY DISTANCE" + 'ENTER'

... Tide Stations
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "TIDE STATIONS" + 'ENTER'

... Wrecks
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "WRECKS" + 'ENTER'

... Obstructions
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "OBSTRUCTIONS" + 'ENTER'

... Lakes Info
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "LAKES INFO" + 'ENTER'

... Lakes By Name
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "LAKES BY NAME" + 'ENTER'

... Points Of Interest
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "POINTS OF INTEREST" + 'ENTER'

... Cursor
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "CURSOR" + 'ENTER'

... Coordinates
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "COORDINATES" + 'ENTER'

... User Points
Press any soft key + 'MAP' + "FIND" + 'ENTER' + "USER POINTS" + 'ENTER'

➤ FISH FINDER SETUP (menu)
The chart plotter combined with the sonar performance of the Fish Finder is one of the most advanced marine navigation system available.
Press any soft key + 'SETTING' + "DEVICES" + 'ENTER' + "FISH FINDER SETUP" + 'ENTER'

➤ GOTO (menu)
Allows to select the main navigation functions to a Target.

... Last GoTo
'GO TO' + "LAST GOTO" + 'ENTER' (or 'GOTO')

... Cursor
'GO TO' + "CURSOR" + 'ENTER' (or 'GOTO')

... Mark
'GO TO' + "MARK" + 'ENTER' (or 'GOTO')

... Routes
'GO TO' + "ROUTES" + 'ENTER' (or 'GOTO')

... Port Services
'GO TO' + "PORT SERVICES" + 'ENTER' (or 'GOTO')

... Clear GOTO
'GO TO' + "CLEAR GOTO" + 'ENTER' (or 'GOTO')

■ GPS = Global Positioning System
Satellite based navigation system operated by the US Department of Defense. It gives the navigator a position 24 hours a day, 365 days a year under any weather conditions.

➤ GPS (page)
Shows in graphic mode GPS data.
'PAGE' + "GPS" + 'ENTER'

➤ GPS SETUP (menu)
Sets the your preferred configuration for the connected GPS.

... Restart GPS
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "GPS SETUP" + 'ENTER' + "RESTART GPS" + 'ENTER'

... Differential Correction *(None, WAAS-EGNOS, RTCM-104)*
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "GPS SETUP" + 'ENTER' + "DIFF CORR" + 'ENTER'

... Navigation Speed *(High, Low)*
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "GPS SETUP" + 'ENTER' + "NAIGATION SPEED" + 'ENTER'

... PRN WAAS SATELLITE *Selection (Auto, 120) (ACTIVE IF DIFFERENTIAL CORRECTION IS WAAS-EGNOS)*
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "GPS SETUP" + 'ENTER' + "PRN WAAS SATELLITE " + 'ENTER'

■ HDG = Heading
Horizontal direction in which a ship actually points or heads in any moment (see also COG).

■ HDOP = Horizontal Dilution Of Precision
Index for position-fixing accuracy. The smaller the HDOP value, the more accurately the position can be fixed.

➤ HIGHWAY 3D
Allows to display the Navigation plane in prospective mode.
'PAGE' + "HIGHWAY 3D" + 'ENTER'

➤ HOME (or Navigation)
See Navigation mode.
'CLEAR'

➤ INPUT/OUTPUT (menu)
Allows to select the following options Port Input 1/2/3, Port Output 1/2/3, Port Output Sentences 1/2/3, C-Link and the Cable Wiring pages.

Warning
After every software upgrade the RAM is cleared and the chart plotter re starts with the usual default settings. Please go to the Input/output menu and set the proper input format once again.

... Port 1/2/3 Input *(NMEA-0183 1200-N-81-N, NMEA-0183 4800-N-81-N, NMEA-0183 4800-N-82-N, NMEA-0183 9600-N-81-N, NMEA-0183 9600-O-81-N, C-COM, BBFF 50/200, AIS 38400, Disabled)*
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1/2/3 INPUT" + 'ENTER'

... Port 1/2/3 Output *(NMEA-0183 4800-N-81-N, NMEA-0180, NMEA-0180/CDX, Disabled)*
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1/2/3 OUTPUT" + 'ENTER'

... Port 1/2/3 Output Sentences *(GLL, VTG, BOD, XTE, BWC, RMA, RMB, RMC, APB, WCV, GGA, HSC, HDG, MWV)*
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "PORT 1/2/3 OUTPUT SENTENCES" + 'ENTER'

... Internal GPS Setup Menu
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "INTERNAL GPS SETUP" + 'ENTER'

... C-LINK Menu
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "C-LINK" + 'ENTER'

... Cable Wiring
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER' + "POWER & I/O CABLE WIRING"

+ 'ENTER'

■ LATITUDE
Angular distance North or South of the equator measured by lines encircling the earth parallel to the equator in degrees from 0° to 90°.

■ LAT/LON
Coodinate system using Latitude and Longitude coordinates to define a position on earth.

➤ LIST (User Points) (menu)
Displays the User Points list on the scren.

... List
Press any soft key + 'SETTING' + "LIST" + 'ENTER' + "LIST" + 'ENTER'

... Send
Press any sot key + 'SETTING' + "LIST" + 'ENTER' + "SEND" + 'ENTER'

... Receive
Press anysoft key + 'SETTING' + "LIST" + 'ENTER' + "RECEIVE" + 'ENTER'

■ LONGITUDE
Angular distance East or West of the prime meridian (Greenwich meridian) as measured by lines perpendicular to the parallels and covering at the poles rom 0° to 180°.

■ MAGNETIC DEVIATION
Angle between the Magnetic North and the Compass North.

■ MAGNETIC VARIATION
The angle between the magnetic and geographic meridians at any pace, expressed in degrees West or East to indicate the direction of magnetic North fom true North. It changes from point to point, and (at the same point) with time.

➤ MAP (menu)
The user may choose either to display or not on the screen the selected objects, depending on his specific requirement.

... Zoom Type *(Standard, Flexi-Zoom)*
Press any soft key + 'MAP' + "ZOOM TYPE" + 'ENTER'

... Fonts & Symbols *(Normal, Large)*
Press any soft key + 'MAP' + "FONTS & SYMBOLS" + ENTER'

... Perspective View *(On, Off)*
Press any soft key + 'MAP' + "PERSPECTIVE VIEW" +'ENTER'

... Dynamic Nav-Aids *(On, Off)*
Press any soft key + 'MAP' + "DYNAMIC NAV-AIDS" + 'ENER'

... Mixing Levels *(On, Off)*
Press any soft key + 'MAP' + "MIXING LEVELS" + 'ENTER'

... Safety Status Bar *(On, Off, Icon)*
Premere un qualsiasi soft key + 'MAP' + "SAFETY STTUS BAR" + 'ENTER'

... Satellite Imagery *(On, Off)*
Premere un qualsiasi soft key + 'MAP' + "SATELLITE IMAGERY" + 'ENTER'

... Currents Prediction
Premere un qualsiasi soft key + 'MAP'+ "CURRENTS PREDICTION" + 'ENTER'

... Other Map Configurations Menu
Press any soft key + 'MAP' + "OTHER MAP ONFIGURATIONS" + 'ENTER'

... Info
Press any soft key + 'MAP' + "INFO" + 'ENTER'

... Find Menu
Pess any soft key + 'MAP' + "FIND" + 'ENTER'

➤ MARK
Reference points related to cursor position

Add Mark:	**'ENTER' + "MARK" + 'ENTER'**
Move Mark:	**place cusor on** *Mark* **+ 'MOVE' + cursor + 'ENTER'**
Delete Mark:	**placecursor on** *Mark* **+ 'DELETE' + 'ENTER'**
Edit Mark:	**placecursor on** *Mark* **+ 'EDIT' + 'ENTER' + selct field** *(Symbol/Name/Color/ Coordinates)* **using cursor + 'ENTER'**
GoTo on Mark:	**place cusor on** *Mark* **+ 'GOTO' + 'ENTER'**
Find Mark:	**press any soft key + 'MAP' + "FIND" + 'ENTER' + "USER POINTS" + 'ENTER'**
Info on Mark:	**press any oft key + 'SETTING' + "LIST" + 'ENTER' + "LIST" + 'ENTER'**
Send Mark:	**press any soft key + 'SETTING' + "LIST" + 'ENTER' + "SEND" + 'ENTER'**
Receive Mark:	**press any soft key + 'SETTING' + "LIST" + 'ENTER' + "RECEIVE" + 'ENTER'**

➤ MEMORY CARD (menu)
The chart plotter uses the optional User C-CARD to save user data: it is a convenient medium to store and retrieve your information.

... Save File *(Mark, Event, Routes, Tracks)*
Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'SAVE'

... *Load File*
Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'LOAD'

... *Delete File*
Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'DELETE'

... *Cartidge Menu*
Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER' + 'CARTR.'

➤ **MOB = Man OverBoard**

It is an important function useful in the case someone or something falls overboard.
Inserting MOB: **'ENTER' + "MOB" + 'ENTER'**
Deleting MOB: **'ENTER' + "MOB" + 'ENTER' + 'ACCEPT'**

➤ **NAVIGATION (or Home)**

From charting, while receiving a fix position and the chart plotter is not in Navigation mode, enables the Navigation mode (also called Home).
When in Navigation mode, the cursor is not shown and all cartographic functions are related to the ship position. The received fix position is centered in the cartography area and the window screen follows the ship position as the position changes. When the cursor key has been pressing, the Navigation mode is disabled and the cursor symbol is shown again. Note that also the cursor symbol is not shown while Navigation mode is active, its coordinates are updated with ship position coordinates.
'CLEAR'

➤ **OTHER MAP CONFIGURATIONS (menu)**

Selects from a predefined table what cartographic objects are displayed and which display options are set.

... *Display Mode* *(Full, Medium, Low, Radar, Tide, Custom)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "DISPLAY MODE" + 'ENTER'

The following are the available selections only if **Custom** has been selected:

... *Place Names* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "PLACE NAMES" + 'ENTER'

... *Name Tags* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "NAME TAGS" + 'ENTER'

... *Nav-Aids & Light Sectors* *(On, Off, No Sector)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "NAV AIDS & LIGHT SECTORS" + 'ENTER'

... *Attention Areas* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "ATTENTION AREAS" + 'ENTER'

... *Tides & Currents* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "TIDES & CURRENTS" + 'ENTER'

... *Seabed Type* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "SEABED TYPE" + 'ENTER'

... *Ports & Services* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "PORTS & SERVICES" + 'ENTER'

... *Routes & Tracks* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "ROUTES & TRACKS" + 'ENTER'

... *User Points* *(On, Off, Icon)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "USER POINTS" + 'ENTER'

... *Depth Range Min*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "DEPTH RANGE MIN" + 'ENTER'

... *Depth Range Max*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "DEPTH RANGE MAX" + 'ENTER'

... *Land Elevation* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "LAND ELEVATION" + 'ENTER'

... *Land Elevation values* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "LAND ELEVATION VALUES" + 'ENTER'

... *Roads* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "ROADS" + 'ENTER'

... *Points Of Interest* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "POI" + 'ENTER'

... *Lat/Lon Grid* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "LAT/LON GRID" + 'ENTER'

... *Chart Boundaries* *(On, Off, Auto)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "CHART BOUNDARIES" + 'ENTER'

... *Value-Added Data* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "VALUE-ADDED DATA" + 'ENTER'

... *Chart Lock* *(On, Off)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "CHART LOCK" + 'ENTER'

... *Underwater Objects Limit*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "UNDERWATER OBJECTS LIMIT" + 'ENTER'

... *Rocks* *(Off, Icon, Icon + Depth)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "ROCKS" + 'ENTER'

... *Obstructions* *(Off, Icon, Icon + Depth)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "OBSTRUCTIONS" + 'ENTER'

... *Diffusers* *(Off, Icon, Icon + Depth)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "DIFFUSERS" + 'ENTER'

... *Wrecks* *(Off, Icon, Icon + Depth)*
Press any soft key + 'MAP' + "OTHER MAP CONFIGURATIONS" + 'ENTER' + "WRECKS" + 'ENTER' 'ENTER'

■ ORIENTATION RESOLUTION

Resolution angle for the Map Orientation, range [5, 30] degrees. The default setting is 30°.

➤ PALETTE

It is possible to select Normal, NOAA, Night Vision or Sunlight for Palette. **Normal** is recommended when the chart plotter is not exposed to the direct sunlight. When this mode is set the maps are displayed in order to use colors as similar as possible to the ones used in the original paper charts. **NOAA** allows setting NOAA paper chart colors presentation. **Sunlight** is designed to enhance the visibility of the screen when the chart plotter is exposed to the sunlight. The maps are much brighter than in the other modes and the depth areas are filled with white color so different depth areas are not easily distinguishable. **Night Vision** is recommended when the environment is dark in order to reduce the glare of the display. The chart plotter displays maps and screen in darker colors.
'POWER' + 'PAGE'
or:
Press soft key + 'SETTING' + "LCD ADJUSTMENT" + 'ENTER' + 'PAGE'

■ PORT INFO

Combination of a Port Info database containing all the relevant Safety and Navigational information normally found in good pilot books and a presentation software which displays special Port Facility Symbols.

➤ ROUTE

Sequence of Waypoints connected by segments. Among the available routes, only one is the active route, which is shown by a straight line and arrows to indicate the direction. The first Waypoint of the active route is surrounded by a circle.

... *Select Route*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "SELECT" + 'ENTER' + 'SELECT' / 'NOTE' / 'COLOR' / 'HIDE'

... *Delete Route*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "DELETE" + 'ENTER'

... *Route Report*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "REPORT" + 'ENTER'

... *Route Color*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "COLOR" + 'ENTER'

... *Send Route*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "SEND" + 'ENTER'

... *Receive Route*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "RECEIVE" + 'ENTER'

... *Automatic Route Check* *(On, Off)*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "AUTOMATIC ROUTE CHECK" + 'ENTER'

... *Route Depth*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "ROUTE DEPTH" + 'ENTER'

... *Route Width*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "ROUTE WIDTH" + 'ENTER'

... *Route Check Accuracy* *(Minimum, Low, Medium, High, Maximum)*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "ROUTE CHECK ACCURACY" + 'ENTER'

... *Route Check Report*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER' + "ROUTE CHECK REPORT" + 'ENTER'

■ RTCM = Radio Technical Commission for Maritime Services

Data format created by the Radio Technical Commission Maritime to transmit Differential GPS corrections.

➤ SETTINGS (menu)

Allows to select the following menu:

... *SETUP Menu*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER'

... *Input/Output Menu*
Press any soft key + 'SETTING' + "INPUT/OUTPUT" + 'ENTER'

... *GPS page*
Press any soft key + 'SETTING' + "GPS" + 'ENTER'
... *C-WEATHER Menu*
Press any soft key + 'SETTING' + "C-WEATHER" + 'ENTER'
... *DEVICES Menu*
Press any soft key + 'SETTING' + "DEVICES" + 'ENTER'
... *Memory Card Menu*
Press any soft key + 'SETTING' + "MEMORY CARD" + 'ENTER'
... *List Menu*
Press any soft key + 'SETTING' + "LIST" + 'ENTER'
... *Track Menu*
Press any soft key + 'SETTING' + "TRACK" + 'ENTER'
... *Route Menu*
Press any soft key + 'SETTING' + "ROUTE" + 'ENTER'
... *Alarms Menu*
Press any soft key + 'SETTING' + "ALARMS" + 'ENTER'
... *Simulation Menu*
Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER'
... *LCD Adgiustment*
Press any soft key + 'SETTING' + "LCD ADJUSTMENT" + 'ENTER'
... *About page*
Press any soft key + 'SETTING' + "ABOUT..." + 'ENTER'

➤ **SETUP (menu)**
Allows to select the folowing menu:

... *Language*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "LANGUAGE" + 'ENTER'
... *Chart Language*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "CHART LANGUAGE" + 'ENTER'
... *Distance & Speed Units* *(Nm & Kts, Sm & Mph, Km & Kmh)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "DIST & SPEED UNITS" + 'ENTER'
... *Depth & Altitude Unit* *(Ft = Feet, Mt = Meter)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "DEPTH & ALTITUDE UNITS" + 'ENTER'
... *Temperature Unit* *(°C , °F)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "TEMPERATURE UNITS" + 'ENTER'
... *Daylight Saving Time* *(On, Off)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "DAYLIGHT SAVING TIME" + 'ENTER'
... *Time Reference* *(UTC, Local time)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "TIME REFERENCE" + 'ENTER'
... *Bearing* *(Auto Mag, True)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "BEARING" + 'ENTER'
... *Map Orientation* *(North Up, Head Up, Track Up)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "MAP ORIENTATION" + 'ENTER'
... *Nav-Aids Presentation* *(International, US)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "NAV-AIDS PRESENTATION" + 'ENTER'
... *Auto Info* *(Off, On Points, On All)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "AUTO INFO" + 'ENTER'
... *Visual COG Bar* *(On, Off)*
Press any soft key + 'SETTING' + "SETUP" + 'ENTER' + "VISUAL COG BAR" + 'ENTER'

➤ **SIMULATION (menu)**
Used in order to use your chart plotter without input data. It generates a display with a moving vessel, so that you can practice using the controls in safety.

... *Speed*
Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "SPEED" + 'ENTER'
... *Heading*
Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "HEADING" + 'ENTER'
... *Date*
Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "DATE" + 'ENTER'
... *Time*
Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "TIME" + 'ENTER'
... *Cursor Control* *(On, Off)*
Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "CURSOR CONTROL" + 'ENTER'
... *Simulation Mode* *(On, Off)*
Press any soft key + 'SETTING' + "SIMULATION" + 'ENTER' + "SIMULATION MODE" + 'ENTER'

■ **SNR = Signal to Noise Ratio**
Ratio of the magnitude of a signal that of the noise (interference).

SOFT KEY
Software keys have different functions according to the modes of operation: their labels for the current functions, located on the front panel, are shown on the screen right above the soft key.

SOG = Speed Over Ground
Calculation of the rate of movement of the ship over the ground.

SPEED
Current velocity at which you are travelling, relative to a ground location.

TARGET (or GoTo)
See GoTo.

TIDE
Periodic rise and fall of the surface of oceans, bays, etc., due principally to the gravitational interactions between the Moon and Earth.

TIDE INFO
Combination of a tide heights database and features which calculate the tide graph for all primary and secondary ports world-wide. This function can calculate the tide heights for any past or future date and as a by-product of this calculation will also display the Maximum and Minimum Tide height and time for the day selected plus the times of Sunrise and Sunset. At some chart levels, the chart plotter will display a new Tide Diamond Symbol for every Port or tide point in the database covered by that particular C-CARD.

TRACK (menu)
As long as the chart plotter is connected to a positioning instrument, it stores all points in its memory. The chart plotter can store a fix when the distance from its last stored position is greater than a defined distance or after a defined time. A line connects such points and represents the past course, called the track of the ship.

... Activate/Deactivate Track
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "ACTIVATE/DEACTIVATE" + 'ENTER'

... Delete Track
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "DELETE" + 'ENTER' + 'BEGIN'/'END'/'WHOLE'

... Configuration Track Menu
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "CONFIG" + 'ENTER'

... LOG
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "LOG" + 'ENTER' + 'TOTAL'/'TRIP'

... Track To Route Menu
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "TRACK TO ROUTE" + 'ENTER'

TRACK TO ROUTE (menu)
This function creates a Route from a pre-recorded Track.

... Track To Route
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "TRACK TO ROUTE" + 'ENTER' + "TRACK TO ROUTE" + 'ENTER'

... Advanced
Press any soft key + 'SETTING' + "TRACK" + 'ENTER' + "TRACK TO ROUTE" + 'ENTER' + "ADVANCED" + 'ENTER'

TTG = Time To Go
Estimated time needed to reach your destination, based on your current speed and the distance to destination.

UTC = Universal Time Coordinated
Time scale based on the rotation of the earth that is used by most broadcast time services.

User C-CARD
The chart plotter uses the optional User C-CARD to save user data: it is a convenient medium to store and retrieve your information. See Memory Card.

USER POINT
Place on the chart identified by its coordinates and displayed on the screen with a reference symbol (see Mark, Waypoint).

WAAS = Wide Area Augumentation System
The Federal Aviation Administration (FAA), in cooperation with other DOT organizations and DOD, is augmenting the GPS/SPS with a satellite-based augmentation system, the WAAS. It will provide a signal-in-space to WAAS users to support en route through precision approach navigation. After achieving initial operational capability, the WAAS will then be incrementally improved over the next years to expand the area of coverage, increase the availability of precision approaches, increase signal redundancy and reduce operational restrictions.

WAYPOINT
Any point to which one intends to navigate. A sequence of Waypoints makes up a route plan.
Add WPT: **'ENTER' + "WAYPOINT" + 'ENTER'**
Move WPT: **place cursor on WPT + 'MOVE' + move cursor + 'ENTER'**

Delete WPT: **place cursor on WPT + 'DELETE' + 'ENTER'**
Edit WPT: **place cursor on** *WPT* **+ 'EDIT' + 'ENTER' + select field** *(Symbol/Name/Color)* **using cursor + 'ENTER'**
Insert WPT: **place cursor on leg + 'INSER' + move cursor + 'ENTER'**
GoTo on WPT: **place cursor on WPT + 'GOTO' + 'ENTER'**
Find WPT: **press any soft key + 'MAP' + "FIND" + 'ENTER' + "USER POINTS" + 'ENTER'**
Info on WPT: **press any soft key + 'SETTING' + "LIST" + 'ENTER'**
Send WPT: **press any soft key + 'SETTING' + "LIST" + 'ENTER' + "SEND" + 'ENTER'**
Receive WPT: **press any soft key + 'SETTING' + "LIST" + 'ENTER' + "RECEIVE" + 'ENTER'**

■ **WGS-84 = World Geodetic System 1984**
Coordinate System or Datum developed by the Defense Mapping Agency (DMA).

■ **ZOOM IN**
Shows more detail in a smaller area.

■ **ZOOM OUT**
Operates similarly to zoom -in, but in the reverse, showing a wider but less detailed view.

■ **XTE = Cross Track error**
Distance from the ship's present position to the closest point on a line between the origin and destinations Waypoints of the navigation leg being travelled.

8. System Test

8.1 SYSTEM TEST

If you have connected your position-finding device according to the instructions, and chosen the proper menu selection for your device, and are still having problems with your chart plotter, the extended auto-test should help determine the problem. Make sure the chart plotter is turned Off. While pressing and holding any other key, turn the chart plotter On. A new menu will appear on the display:

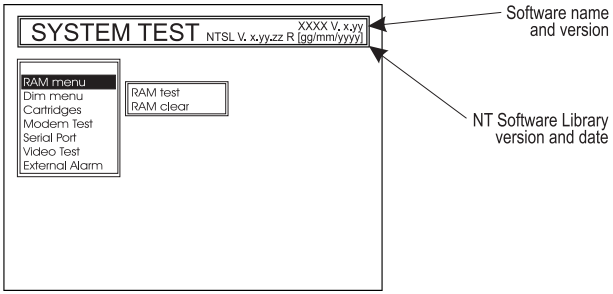


Fig. 8.1 - System Test

Use the cursor key to select the desired test: this will display in reverse video and with the relative menu window. To choice the test press 'ENTER'. To exit from any submenu press 'CLEAR'. To exit from the System Test turn Off the chart plotter.

8.1.1 RAM Menu

This test verifies the integrity of the memories and if desired during this test all the internal memory can be erased and the default setting restored.

■ RAM Test

To verify the integrity of the RAM. If on the screen the message "ERROR" appears, the RAM is physically damaged.

■ RAM Clear

To clear internal memory. If the chart plotter exhibits unusual behavior, or appears to be malfunctioning, it may be possible to correct the problem by clearing RAM. This operation will erase all Marks, Events, Routes, stored track plots and destinations. It will also return all selections (Input Data Format, Autopilot selection, etc.) to original default values.

8.1.2 DIM Menu

To select the desired value for keypad light.

■ Contrast

The first option allows to adjust the contrast. Each time you pressed the cursor key

to right, the screen will decrease brightness, instead of to left it will increase brightness.

■ **Backlight**

The second option allows to set the keyboard backlight.

8.1.3 CARTRIDGES

To check the C-CARD.

■ **Internal Data Base Test**

The first option allows to check the background cartography.

■ **C-CARD Test**

To test the C-CARD. There are the possible situations:

1. if there is a C-CARD inserted in the slot and there is not a malfunction, the name of the C-CARD zone and the message "OK" are shown.
2. if there is a C-CARD inserted in the slot, but it is a damaged C-CARD
3. if there is not any C-CARD inserted in the slot, the message "not present" is shown.
4. if there is an User C-CARD inserted in the slot, the message "USER C-CARD" is shown.

■ **C-CARD Connector**

Indicates if there is a malfunction in the connector. It is used only in production.

8.1.4 MODEM TEST

To check the Modem connections. Press 'ENTER' to select the preferred Port related to the connections made, to the Port that the Modem C-COM is connected.

8.1.5 SERIAL PORT

If you are having problems receiving data from the position-finding instrument, this test should help determine the problem.

■ **Change Parameters**

To change the parameers of the serial interface. This menu allows to select the **Port**, the **Baud Rate** between 4800 or 9600, the **Data Bits** (Word Length) between 7 or 8, the **Parity** between even, odd or none, the **Stop Bits** between 1 or 2.

■ **Input Data Display**

To allow the chart plotter to act as a computer terminal and display the incoming data exactly as it received. If the data displayed on the screen is unrecognizable, you may have selected the wrong input parameters for your particular receiver. Check your receiver manual to be sure that you have selected the proper interface format. If the screen is blank, you may have a broken connection, and no data is being received. Use 'ZOOM IN' to stop (or continue after pause) data displaying, 'ENTER' to show data in hex or ASCII mode (normal or small) and 'CLEAR' to exit.

8.1.6 VIDEO TEST

Allows a full text on the functionality of the screen.

8.1.7 EXTERNAL ALARM

To check if the External Alarm has been transmetted.

appendix A. Troubleshooting

THE CHART PLOTTER DOES NO TURN ON

Make sure that the correct voltage (10-18 volt dc) is present. heck also that the polarity is correct. Refer to the Par. 2.2.

THE CHART PLOTTER DOES NOT GET A VALID FIX

Make sure that no metal obstacle is placed around the chart plotter acting as a shield for the antenna. If, after 15 minutes, the chart plotter does not get the fix, turn it Off and On again.

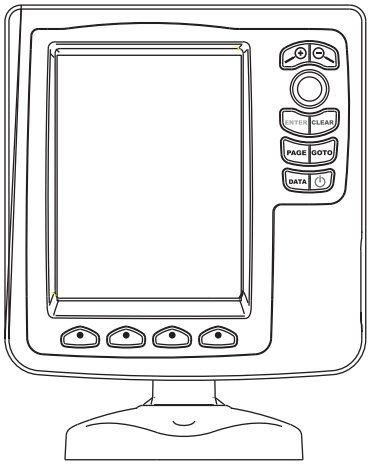
THE SCREEN BECOMES DARK AFTER SOON EXPOSITION

Adjust contrast (see Par. 2.3).

THE CHART PLOTTER DOES NOT RESPOND TO ANY COMMAND

Try to turn Off, and then turn On. If the problem persists, erase the memory (see Par. 8.1).

SMARTER CHART 500 CHART PLOTTER
SMARTER CHART 500 SOUNDER COMBO
SMARTER CHART 500 AIS COMBO



TECHNICAL SPECIFICATIONS

- Power Consumption
  - Chart Plotter : 600 mA max @12V
  - Sounder Combo : 12W Average; 24W peak (with FF on)
- Power Supply : 10 - 35 Volt dc, 7Watt max
- Display : TFT trasflective LCD sunlight (active area 5")
- Display Resolution : 320 x 240 pixels
- Cartography : C-MAP By Jeppesen NT+ & MAX C-CARD
- Operating temperature range : 0/+55°C (32/+131°F)
- Memory : Non volatile
- Keyboard : Silicon rubber, backlight
- Weight : 900 gr
- Accessories :
  - Fuse 2 Amp. + fuseholder (Chart Plotter)
  - Fuse 3 Amp. + fuseholder (Sounder Combo)
  - Fuse ? Amp. + fuseholder (AIS Combo)
  - External Bracket and I/O cable 1,5 mt/5.9Ft
  - Protective cover
  - Flush mounting kit
  - User Manual

FF MODULE 600W-50-200KHZ TECHNICAL SPECIFICATIONS

- Power Output : 600W (4800Wpp), 50/200KHz Dual Frequency
- Max Depth : 213m (700Ft) at 200kHz, 457m(1500Ft) at 50kHz
- Automatic Recognition of the AIRMAR "X-DUCER ID" transducers for best performance
- Advanced Digital Signal Processing
- Speed & Temperature Sensor (if available on transducer)
- Alarms (shallow water, depth, Fish, temp)
- Trip Log, Fish Symbols
- STC, Interference Rejection, Automatic noise reduction
- A-scope, White Line, Zoom x2/x4
- Auto range/gain/frequency/shift/ping rate

INSERTING/REMOVING PROCEDURE

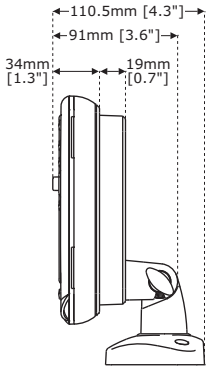
INSERTING C-CARD

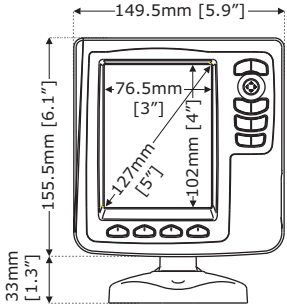
Remove the front cover as explained in the following picture. Hold the C-CARD by the long inclined side so that you can see the C-MAP label and gently push the C-CARD into the slot as far as it will go to hold fixed into the slot and place the front cover again.

REMOVING C-CARD

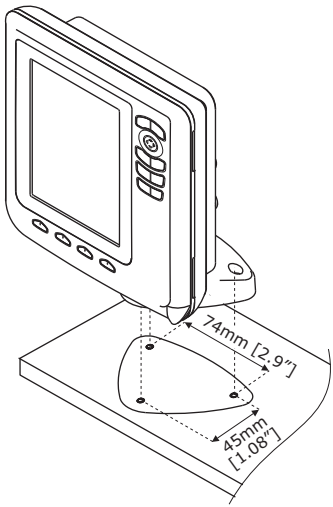
Remove the front cover and the C-CARD remove out of the slot.

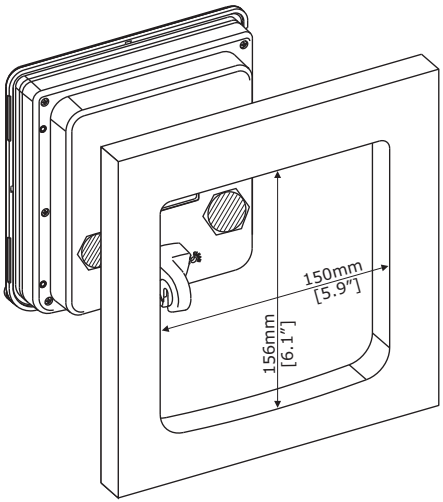
DIMENSIONS



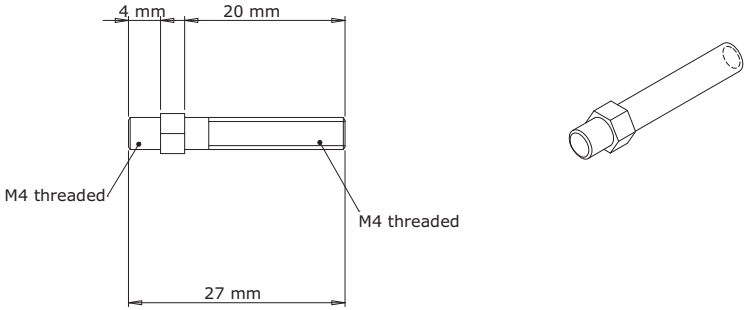


INSTALLATION





Bracket mounting (on the left) and Flush mounting (on the right)

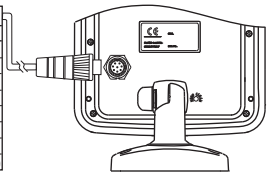


Mounting Screws

EXTERNAL WIRING

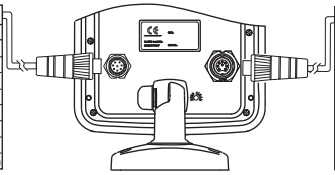
EXTERNAL WIRING FOR CHART PLOTTER

POWER & I/O CONNECTOR/CABLE		
PIN	**CABLE COLOR**	**FUNCTION**
1	BLACK	PWR-/GND/COMMON
2	RED	PWR + (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	COMMON
5	GRAY	OUTPUT 2+
6	YELLOW	OUTPUT 1+
7	BROWN	INPUT 2+
8	BLUE	EXT. ALARM SIGNAL (to GND when ON)



EXTERNAL WIRING FOR SOUNDER COMBO

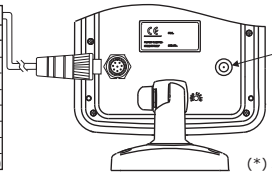
POWER & I/O CONNECTOR/CABLE		
PIN	**CABLE COLOR**	**FUNCTION**
1	BLACK	PWR-/GND/COMMON
2	RED	PWR + (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	COMMON
5	GRAY	-
6	YELLOW	OUTPUT 1+
7	BROWN	-
8	BLUE	EXT. ALARM SIGNAL (to GND when ON)



TRANSDUCER Connector	
PIN	**FUNCTION**
1	DEPTH +
2	GND
3	TEMP1 +
4	POWER SUPPLY +5Vdc, 1A max
5	SENSE +
6	DEPTH SHIELD
7	DEPTH -
8	SPEED +

EXTERNAL WIRING FOR AIS COMBO

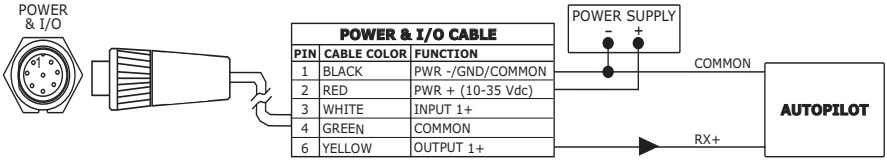
POWER & I/O CONNECTOR/CABLE		
PIN	**CABLE COLOR**	**FUNCTION**
1	BLACK	PWR-/GND/COMMON
2	RED	PWR + (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	COMMON
5	GRAY	OUTPUT 2+ (*)
6	YELLOW	OUTPUT 1+
7	BROWN	-
8	BLUE	EXT. ALARM SIGNAL (to GND when ON)



(*) AIS + GPS data at 38400 baud

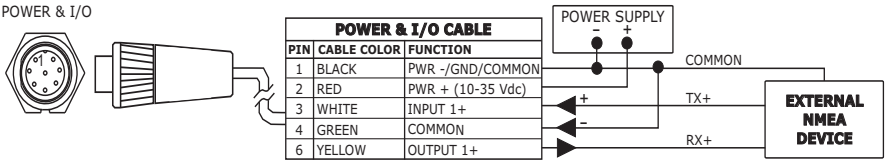
TYPICAL CONNECTIONS - "POWER & I/O" CONNECTOR

AUTOPILOT CONNECTIONS



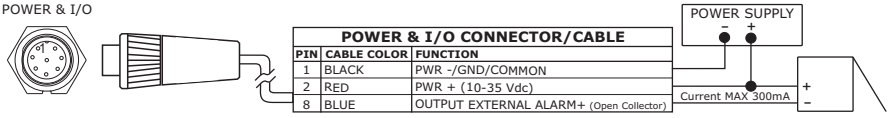
Autopilot Connection on Port 1

NMEA EXTERNAL CONNECTIONS

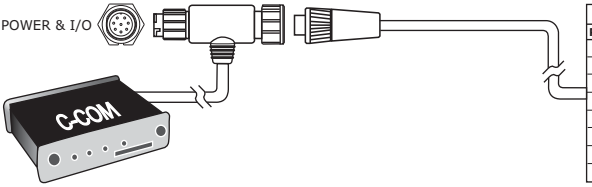


External NMEA Connection on Port 1

EXTERNAL ALARM CONNECTIONS



C-COM CONNECTIONS



POWER & I/O CONNECTOR/CABLE		
PIN	CABLE COLOR	FUNCTION
1	BLACK	PWR-/GND/COMMON
2	RED	PWR+ (10-35 Vdc)
3	WHITE	Used by C-COM
4	GREEN	Used by C-COM
5	GRAY	OUTPUT 2+
6	YELLOW	Used by C-COM
7	BROWN	INPUT 2+
8	BLUE	OUTPUT EXTERNAL ALARM+

POWER & I/O Connection on Port 1

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